Engineer INTELLIGENCE

BULLETIN NO. 3

ENGINEER SECTION

HQ. EIGHTH ARMY

Instructors Reading this Document
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MAY 1945

Name _____ Date _____

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NOTICE

This document is classified as SECRET only because portions of the contents describe the effectiveness or ineffectiveness of Japanese tactics, techniques, and material against our troops. The material contained herein may be used for the training of troops.

Published by

ENGINEER SECTION, HEADQUARTERS EIGHTH ARMY

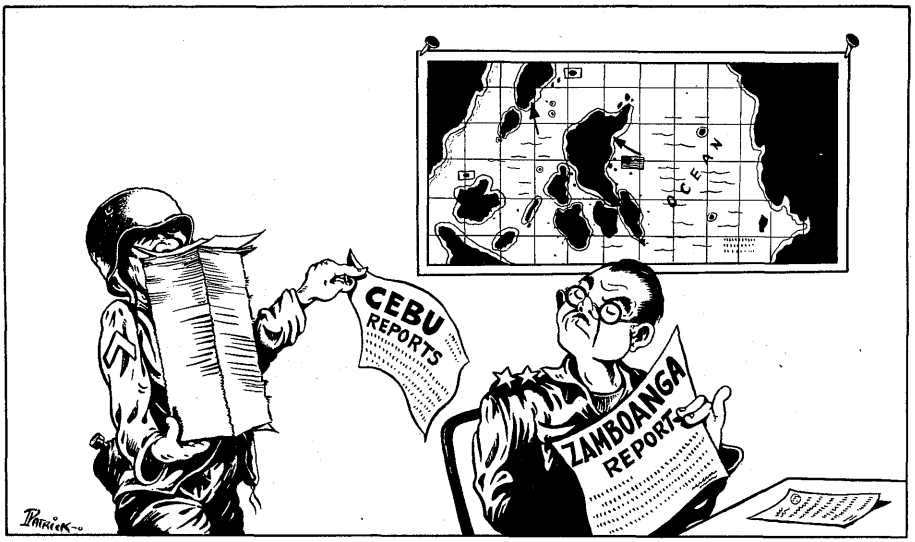
in May 1945

Distributed to all Eighth Army units; GHQ, SWPA: USAFFE; FEAF; Sixth Army; Tenth Army; Seventh Fleet; PHIBSEC; Land Headquarters, SWPA; and Engineer Board, Ft. Belvoir, Va.

I-ALL TROOPS

Because the subject matter of this issue of the Engineer Intelligence Bulletin is of general interest and application, it is being distributed to Eighth Army troops of all branches. The contents are limited to certain specific information on Japanese use of land mines and fortications obtained during recent operations in the SWPA.

The material on mines should be used by troops only in accordance with existing training directives, which provide in general: that all combat and service troops will be trained in precautions to be taken in the vicinity of mines and booby traps, methods of probing for mines, methods of removing mines and booby traps at a safe distance with cables, and methods of marking and guarding enemy mine fields to safeguard passage of friendly troops; and that individuals in combat engineer units, infantry ammunition and pioneer platoons, and infantry anti-tank platoons will be given additional training in the recognition of mines and booby traps and in the more refined techniques of disarming, lifting, and destroying activated mines and booby traps. Personnel not especially trained should not tamper with mines of any kind, friendly or enemy.



II - GENERAL REPORTS FROM OPERATIONAL AREAS

CEBU

I - General

Extensive enemy defensive installations were encountered by our troops during the landing on the Talisay - Tanke beach south of Cebu City but these, fortunately, were not occupied or defended by fire. On the advance into Cebu City, the same situation obtained; the city was strongly prepared for defense with numerous street blocks, pillboxes, mines, and shelters, but was practically undefended. Upon the approach of American forces, the Japanese promptly withdrew into strongly prepared defensive positions in the hills northwest of Cebu City. The following report on the Cebu defenses covers only the Talisay - Tanke beach defenses, installations in Cebu City, and a well constructed road block along the Mananga River, and supplements the brief preliminary report on Page 4 of Engineer Intelligence Bulletin No. 2.

II - Talisay - Tanke Beach Defenses

A. General layout of defenses:

1. For a complete layout of defenses, see Figure 1.

2. It will be noted in Figure 1 that all pillboxes and firing positions, with two exceptions, were in one line along the edge of the coconut grove fringing the beach. There was no depth to the position. Practically all of the firing positions were designed for frontal or flanking fire. The area between Tanke and the larger cemetery contained the heaviest concentration of pillboxes, trenches, covered firing positions, and shelters. These commanded the entire landing beach and offshore area. There were a few large

JAPANESE DEFENSIVE POSITIONS

TALISAY - TANKE LANDING BEACH AREA, CEBU ISLAND, P.I.

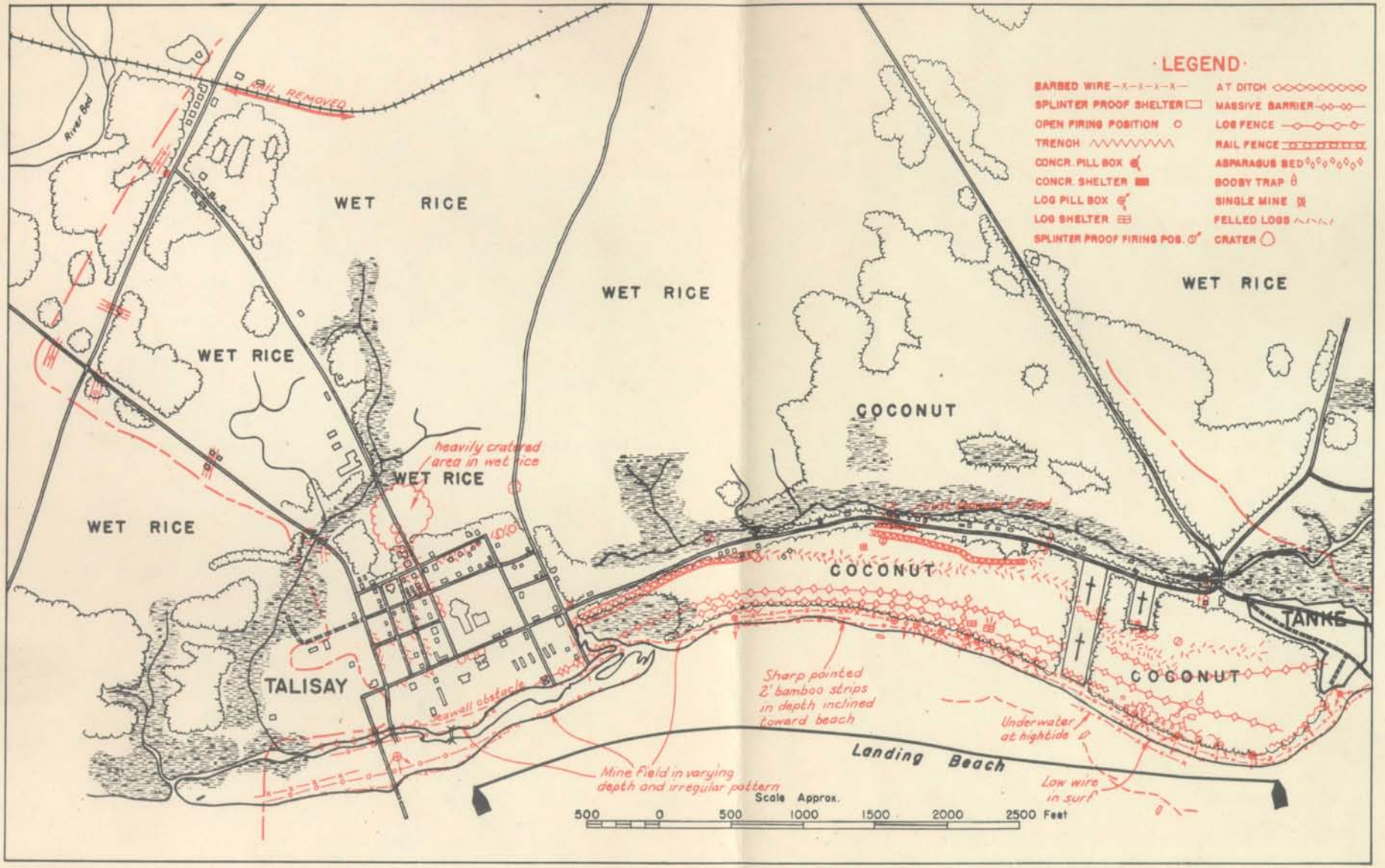


FIGURE 1 - PAGE 3

shelters back of the beach, apparently designed for CP's, but no artillery, mortar, or AT gun positions were discovered. Trenches were of simple standing zig-zag or wavy types (Figure 2), generally not revetted, and with several splinter-proof covered bays. The concrete pillboxes and shelters ranged from 7 inches to 3 feet in thickness; coconut log emplacements were from one to four logs in thickness. Splinter-proofs generally consisted of one to two inch lumber sheathing covered with sand or sand bags (See Figures 3 - 8).

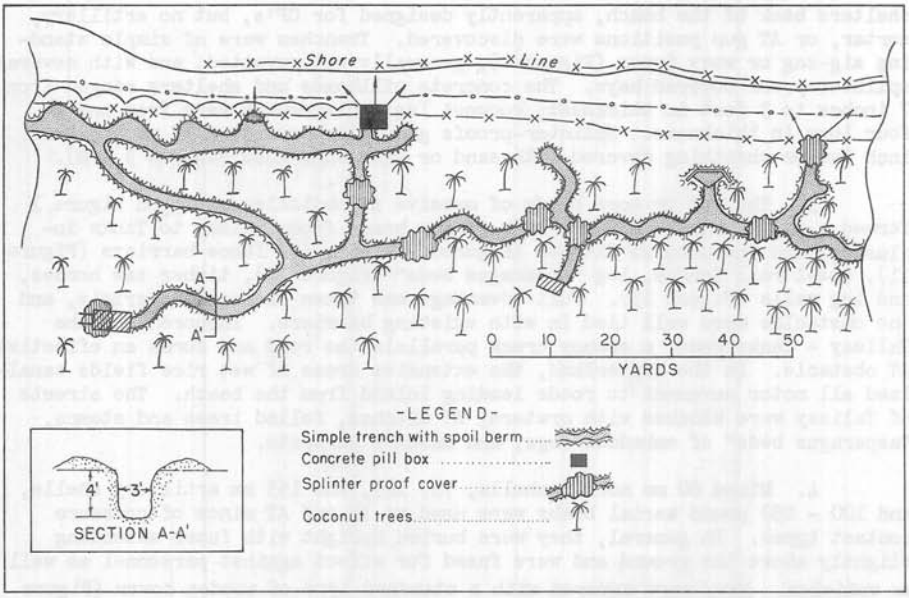
3. The two or more bands of massive AT obstacles shown on Figure 1 formed a continuous AT barrier back of the beach from Talisay to Tanke inclusive, and included AT ditches (Figures 9 & 10), log fence barriers (Figure 11), steel rail fences, log "asparagus beds" (Figure 12), timber saw horses, and log walls (Figure 13). Full advantage was taken of local materials, and the obstacles were well tied in with existing barriers. Inshore from the Talisay - Tanke road, a swampy creek parallels the road and forms an effective AT obstacle. In the hinterland, the extensive areas of wet rice fields canalized all motor movement to roads leading inland from the beach. The streets of Talisay were blocked with craters, AT ditches, felled trees and stumps, "asparagus beds" of embedded logs, and masonry parapets.

4. Mixed 60 mm mortar shells, 75, 105, and 155 mm artillery shells, and 100 - 250 pound aerial bombs were used as AP and AT mines of pressure contact types. In general, they were buried upright with fuses extending slightly above the ground and were fused for effect against personnel as well as vehicles. Many were covered with a standard type of wooden cover (Figure 14). An almost continuous band of mines extended the length of the beach between the shoreline and the gun positions. Ordinarily, several rows of mines were spaced at random within the band (Figure 15). On the sand spit in front of Talisay a single row of bombs were placed about 15 feet apart. An additional band of mines along the shore behind the spit was reported. Mines were incorporated into road blocks in Talisay and on the roads back of the beach (Figure 16).

5. Anti-personnel obstacles, consisting of wire entanglements and short, pointed bamboo strips were employed (Figure 17). One band of wire obstacles extended the entire length of the beach. Included was one short section of underwater wire (Figure 18), which was completely submerged only at high tide. Another strip of low wire placed in the surf covered an 880 foot frontage along the beach (Figure 18). A shallow field consisting of rows of two feet long pointed bamboo strips extended for about 750 feet in front of one section of the forward line of emplacements.

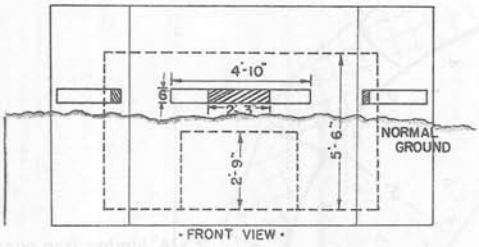
6. The log boom off Tanke consisted of a double row of logs and bamboo tied or chained together, with fish nets attached. Apparently these nets were intended to foul the propellers of craft attempting to cross over the boom. The boom was not mined.

7. Pillboxes, AT ditches, trenches, shelters, and massive obstacles were concealed by utilizing the palm groves, dummy nipa huts, beach sand, palm fronds, woven fiber panels, dummy tin roofs, vines, and other plants and foliage. Much of the camouflage was disrupted at the time of the inspection. Conscientious effort appears to have been made to conceal all installations except the AT band of felled trees back of the beach, the underwater obstacles, and the street blocks in Talisay.



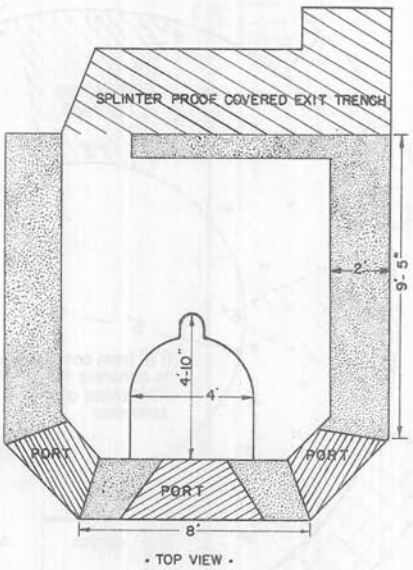
DETAIL OF TYPICAL SECTION OF TRENCH, TALISAY-TANKE BEACH AREA

Section of Trench, Talisay - Tanke Beach



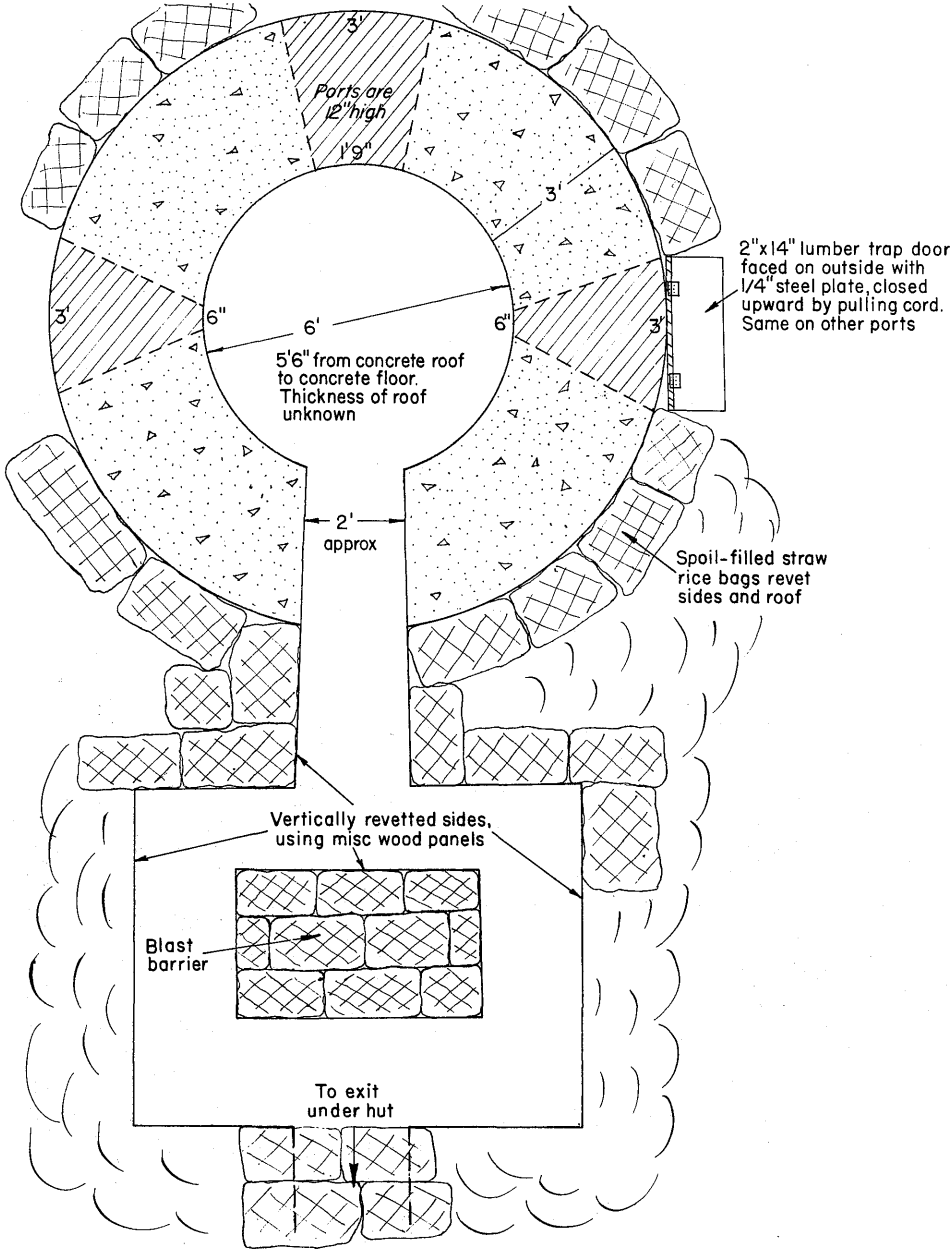
CONCRETE PILLBOX

TALISAY BEACH



Sketch of Heavy Concrete Pillbox - Talisay Beach
(See Photos Page 8)

Photo of Pillbox in Above Sketch

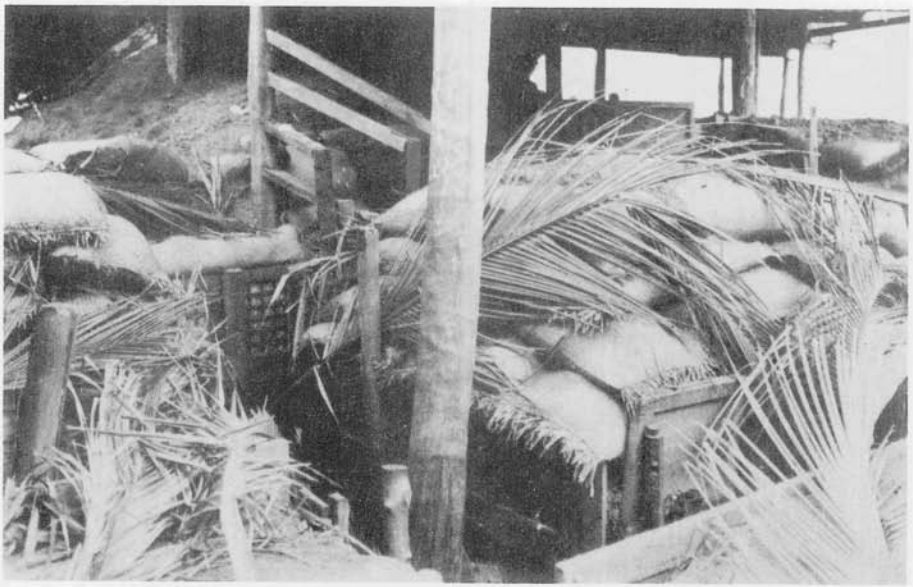


SKETCH OF HEAVY CONCRETE PILLBOX, TALISAY BEACH

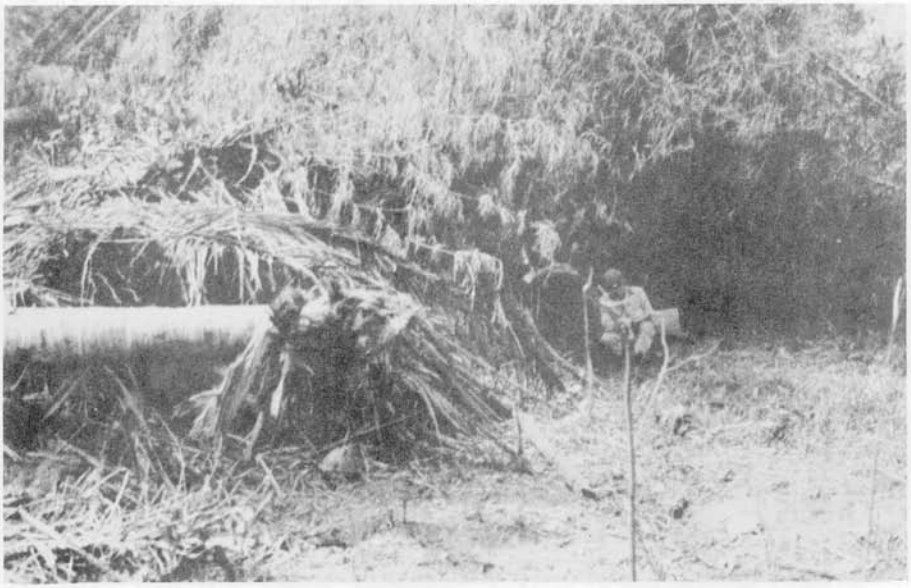
(See Photos Page 8)

FIGURE 4 - PAGE 7

Photo of Pillbox in Figure 4

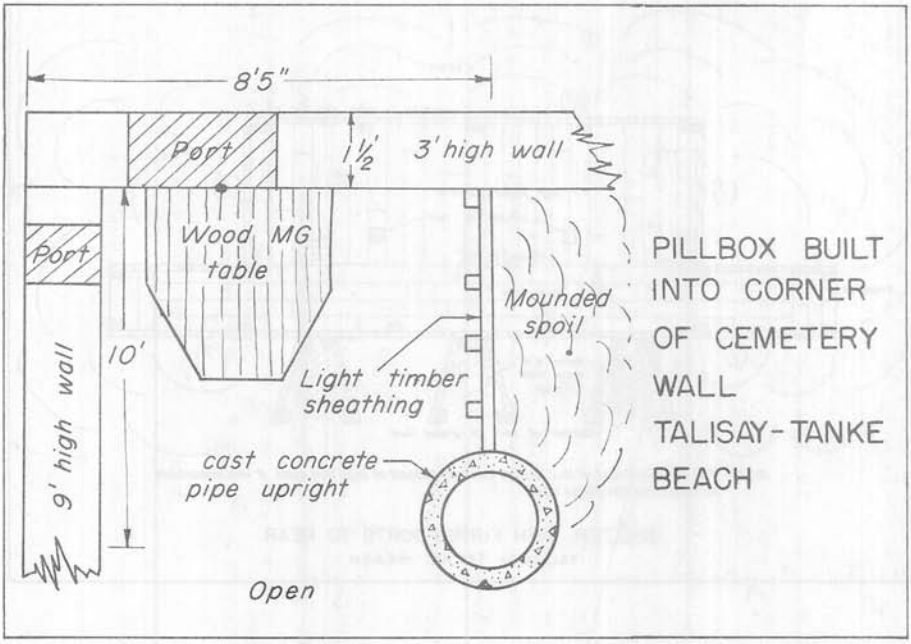


Another View of Pillbox in Figure 4

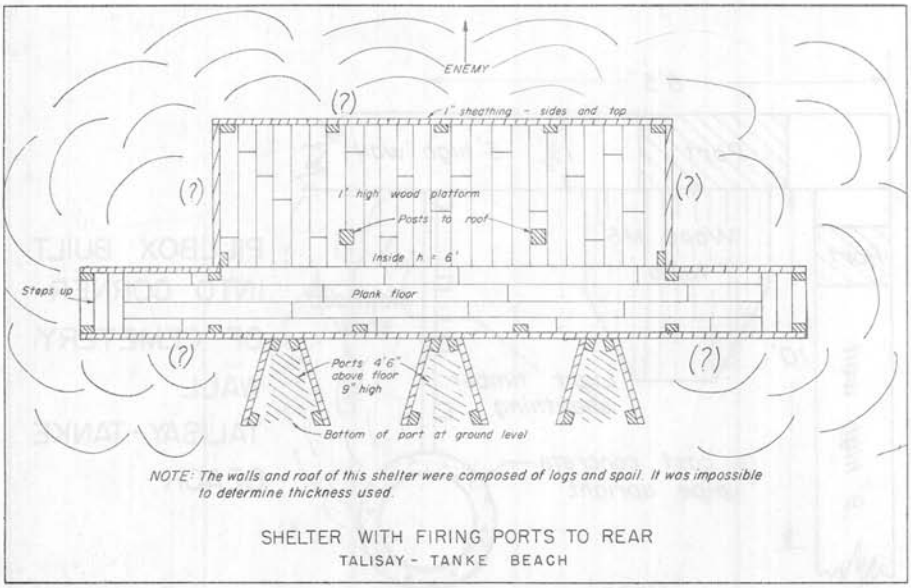


Log Shelter, Talisay - Tanke Beach Area

Splinter Proof Firing Position, Talisay - Tanke Beach

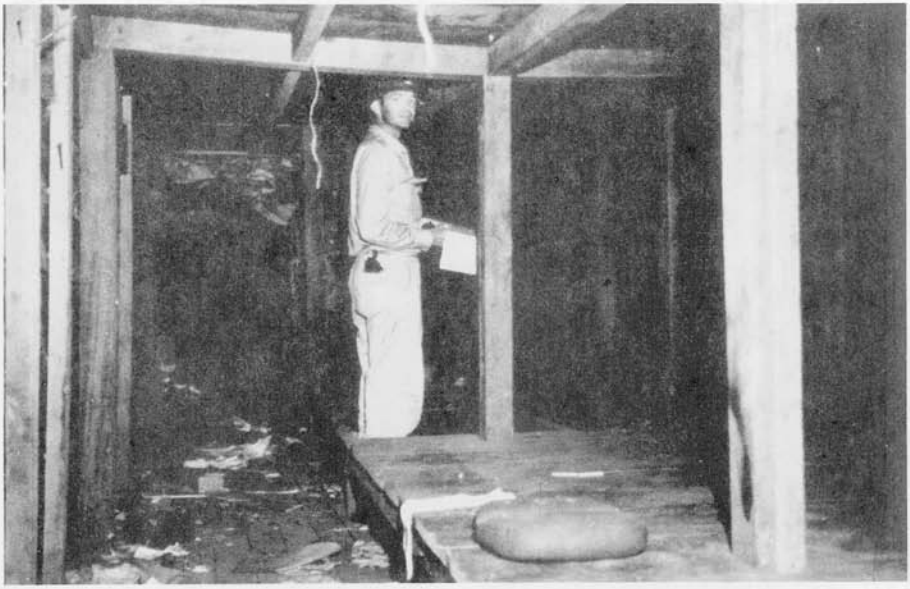


Pillbox in Corner of Stone Wall, Talisay - Tanke Beach
(See Sketch Above)

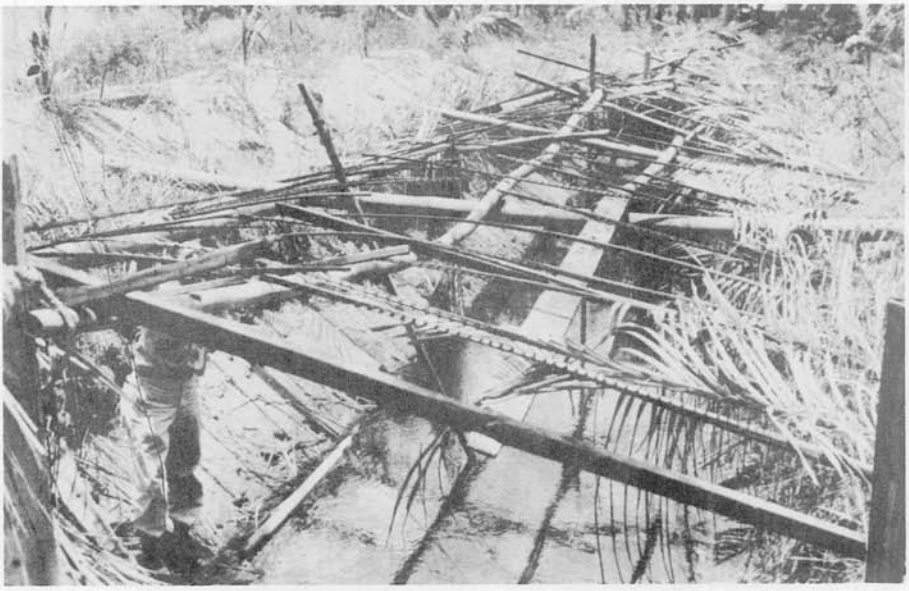


NOTE: The walls and roof of this shelter were composed of logs and spoil. It was impossible to determine thickness used.

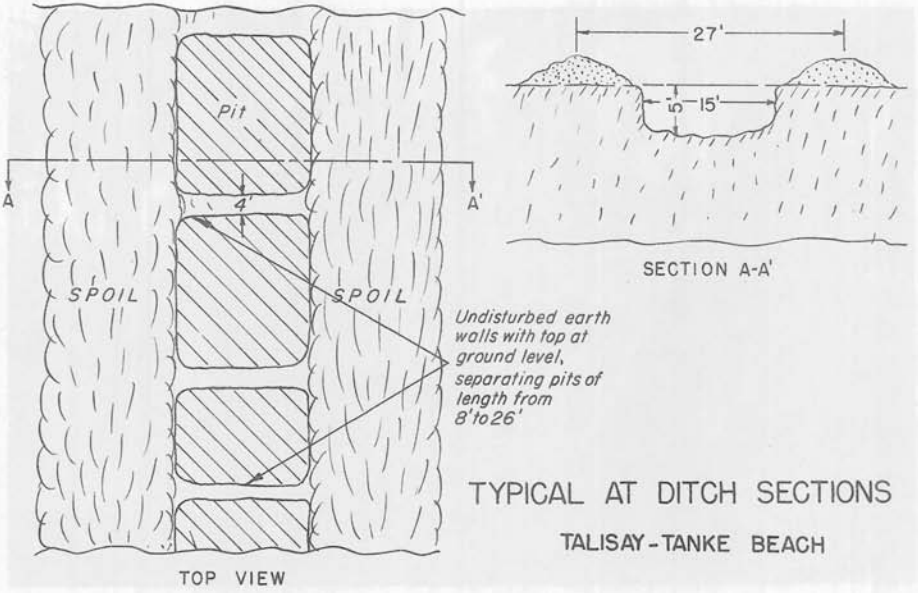
SHELTER WITH FIRING PORTS TO REAR
TALISAY - TANKE BEACH



Interior of Shelter, Talisay - Tanke Beach
(See Sketch Above)



Typical AT Ditch, Talisay - Tanke Beach

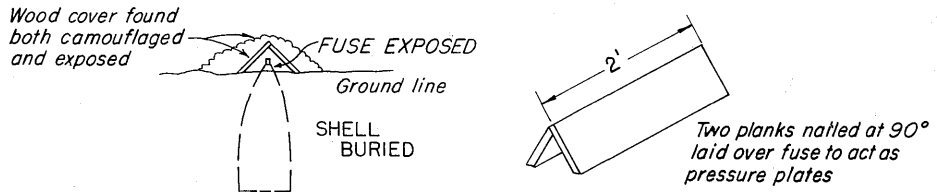


AT Crater Street Block, Talisay City
Figure 10

Log Fence Barrier, Talisay - Tanke Beach
Figure 11

Asparagus Bed Street Block, Talisay City
Figure 12

Log Wall AT Barrier, Talisay - Tanke Beach
Figure 13



WOOD COVER PLACED OVER MANY MINES

FIG. 14 TALISAY BEACH AREA AND MANANGA R. BRIDGE AREA

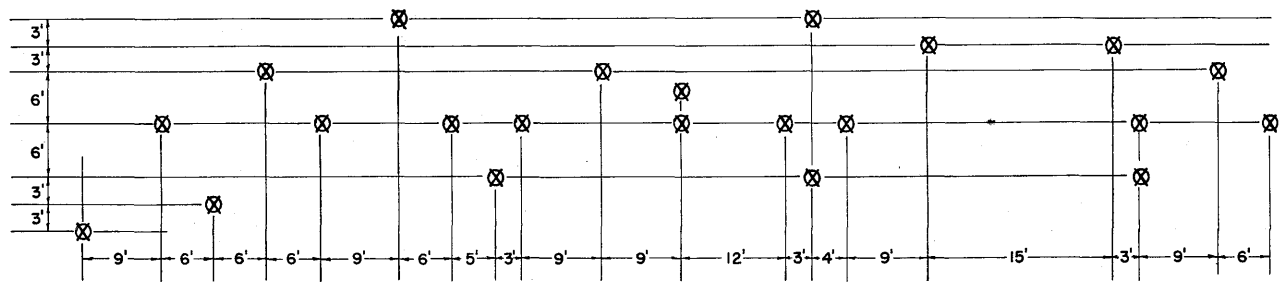
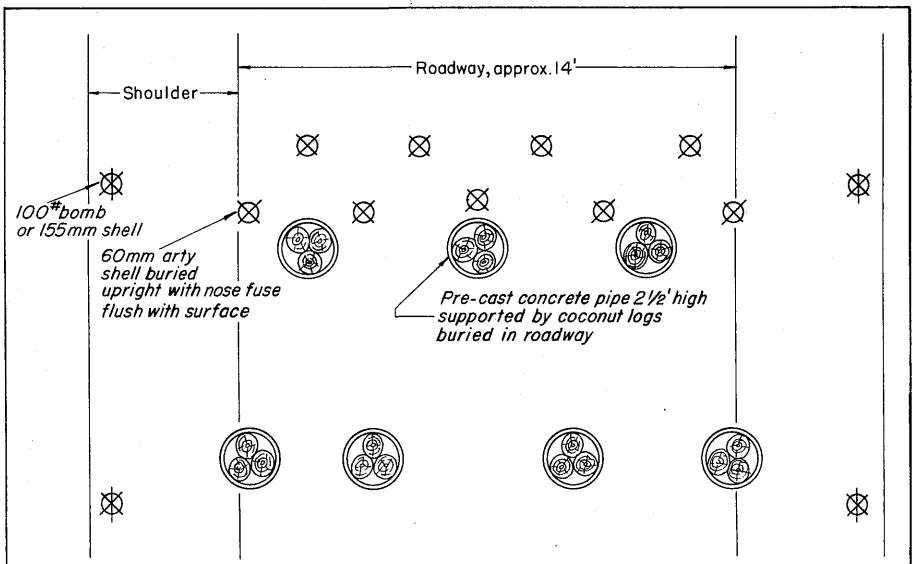
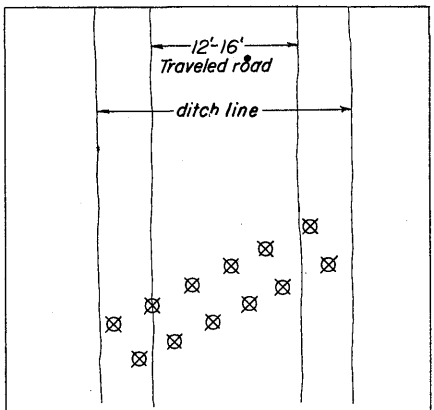


FIG. 15 PATTERN OF PORTION OF MINE FIELD ON TALISAY-TANKE BEACH



ROAD BLOCK FOUND ON TALISAY-TANKE ROAD



Legend: ⊠ Shell or bomb buried vertical with nose fuse extending above ground

TYPE MINE ROAD BLOCK

(Four of these found on roads in hinterland back of Talisay beach)

NOTE: Mines covered by palm fronds lying across road

FIGURE 16 - PAGE 16

Bamboo Strip Anti-personnel Obstacle, Talisay - Tanke Beach
Figure 17

Underwater Wire and Wire in Surf, Talisay - Tanke Beach
Figure 18

B. Effectiveness of the Defensive Systems:

1. Since the existing beach defenses were not manned, they had little effect on the landing of our forces except for the delay caused by mines and obstacles. The minefields along the beach destroyed several amphibious tractors, were responsible for some casualties in the first wave of troops and scattered casualties later, and restricted progress of the first waves over the beach. Poor concealment of mines limited their effect. Two of the five exit roads to Highway No. 1 were rapidly cleared of mines and obstacles and caused little delay.

2. Although camouflage was disrupted extensively at the time of the survey, existing remnants indicate that it was probably very effective against high or medium altitude visual or photo observation.

C. Conclusions:

1. Japanese employment of bombs and shells as improvised AT and AP mines was excellent. Their effectiveness was limited only by poor concealment, failure to arm some shells, and failure to cover them with fire. The 75 mm shells used would have been particularly effective against personnel if they had been properly concealed.

2. The AT ditches were adequate to stop our medium tank. The log and rail barriers probably would not have stopped medium tanks or bulldozers completely, but would have provided sufficient delay to prevent armor overrunning a position covered by adequate AT and small arms fire, and made the tanks good targets for AT weapons.

3. Most of the firing positions and shelters afforded protection only against small arms fire, blast, shell and bomb fragments, and light mortar fire. None of the emplacements furnished protection from direct hits of 100 pound bombs or naval shell fire. Considered as light emplacements, the works demonstrated excellent improvisation and effective utilization of locally available materials by the Japanese.

III - Mananga River Bridge and Road Block on Highway No. 1

A. General:

The Highway No. 1 bridge over the Mananga River southwest of Pardo presents an interesting example of an elaborate road block. The block was intended to defend against an American advance up the east coast of the island. Figures 19 - 24 give a complete description of the block. In addition to the minefield in the stream bed and the mines placed along the shoulders of the main road (Figure 19), mines were planted along possible bypass approaches and at random in open fields. All the mines located were either artillery shells or aerial bombs, planted upright in the ground, camouflaged, and fused for pressure detonation.

B. Discussion:

As planned, the block would have been extremely effective against mechanized attack. The combination of the mine fields and mined road shoulders, the blown bridge, the formidable AT ditches, and the dragon teeth, all covered by prepared firing positions would have been very difficult to reduce had they been defended.

IV - Cebu City Defenses

A. The following data on individual installations is reported:

1. Street and Road Blocks:

a. Road shoulders and roadways were mined with aerial bombs, shells and yardstick mines (See Figure 24).

b. Some street blocks consisted of large buried marine mines or depth charges behind movable knife-rests of timber and barbed wire placed across the street (See Figure 25).

c. Railroad rails supported by heavy concrete posts or logs and extending across streets were used as blocks. These generally were tied in to stone buildings, walls, or other natural flanking obstacles (See Figure 26).

d. Heavy concrete posts staggered across streets at intervals prohibiting the passage of vehicles or tanks were employed (See Figure 27 a & b).

e. Log crib walls were filled with debris, logs and rubble (See Figure 28).

f. Heavy log posts were set into the pavement and lashed together by cables.

g. Aerial bomb and shell mines and wire obstacles were incorporated into many of the blocks described above.

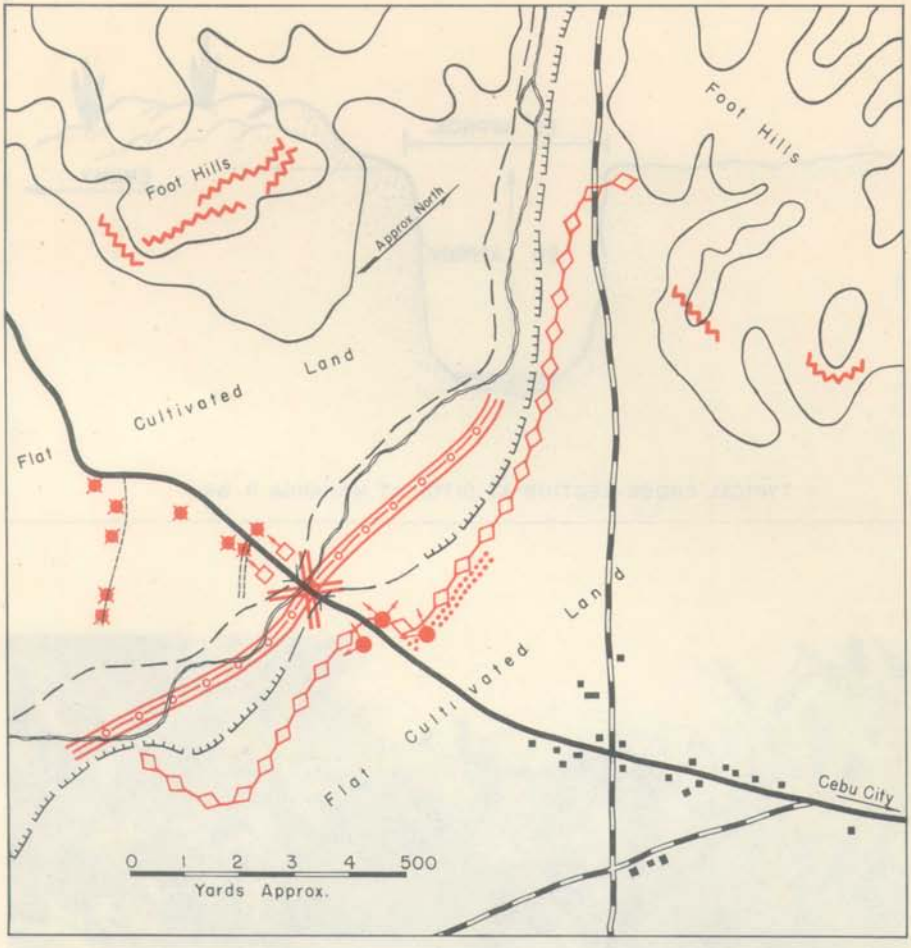
2. Firing Positions:

Many road blocks and street tangents were covered by MG and rifle positions of the open parapet, splinter-proof, or concrete pillbox types; or by MG and rifle positions built into buildings and walls. For characteristic positions, see Figures 29 & 30.

B. Conclusions:

1. Had Cebu City been defended and the barriers covered by AT, MG, and rifle fire, the obstacles described above would have been very effective against personnel, vehicles, and tanks. Undefended, they caused only minor delay and very few casualties to vehicles and personnel.

2. The Cebu City defenses indicate that the Japanese are well indoctrinated in the development of the potential strength of cities as defensive positions.

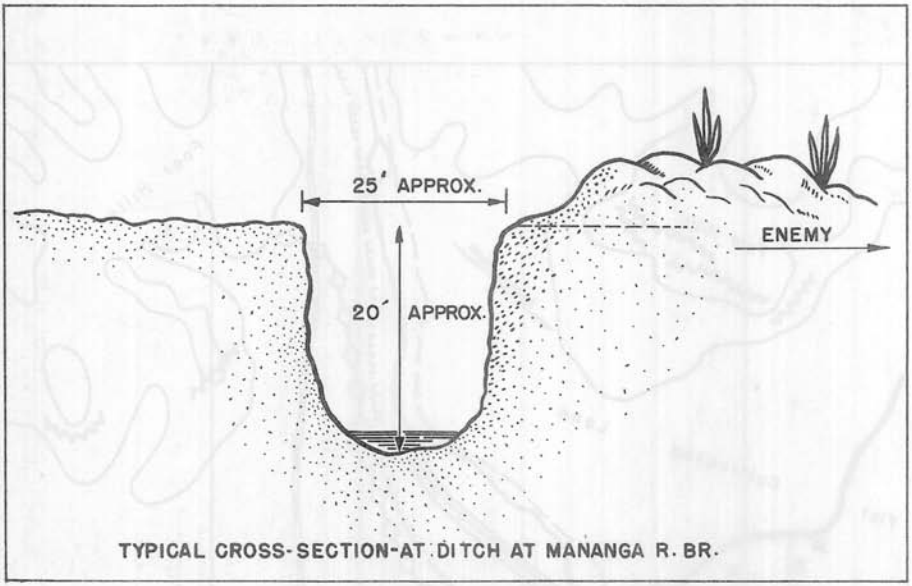


LEGEND

SURFACED HIGHWAY
SECONDARY ROADS ALL WEATHER
SEASONAL ROAD
FOOT PATH
RIVER BED BOUNDARY
HIGH CLIFF RIVER BED BOUNDARY
STREAM

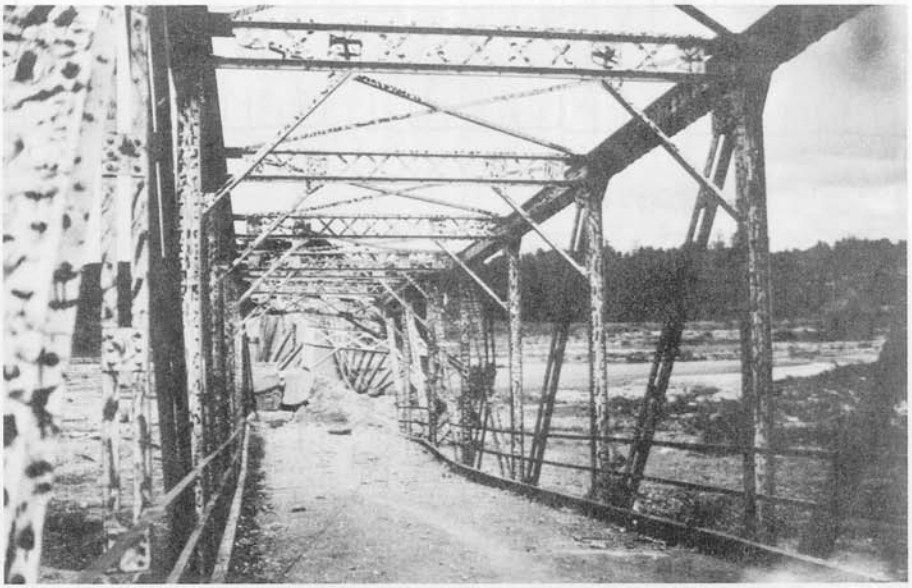
PILLBOX
OPEN FIRING POSITION
TRENCHES
DRAGONS TEETH
ANTITANK DITCH
MINE FIELD
INDIVIDUAL MINE

SKETCH OF MANANGA RIVER ROAD BLOCK



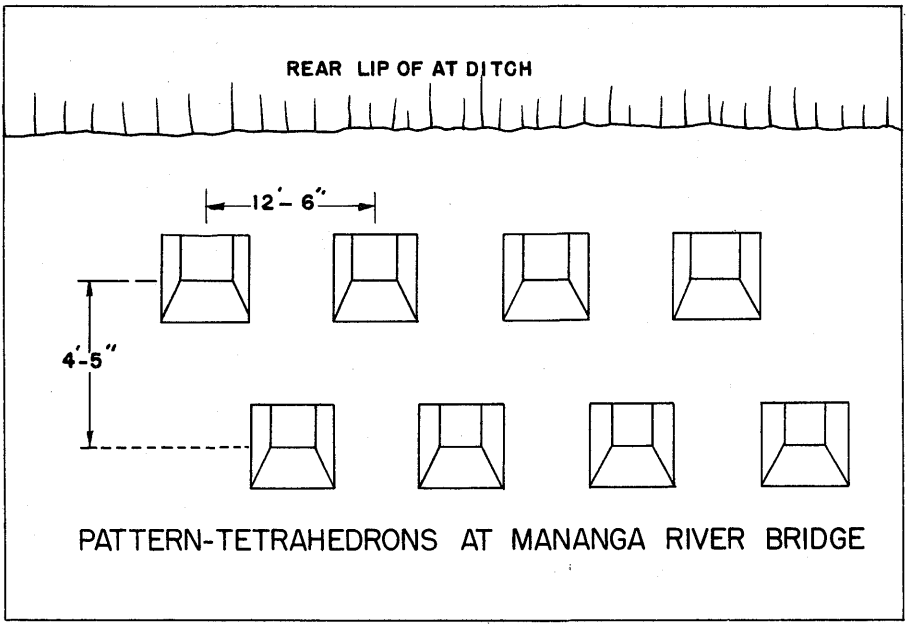
TYPICAL CROSS-SECTION-AT DITCH AT MANANGA R. BR.

AT Ditch and Dragon Teeth, Mananga River Bridge

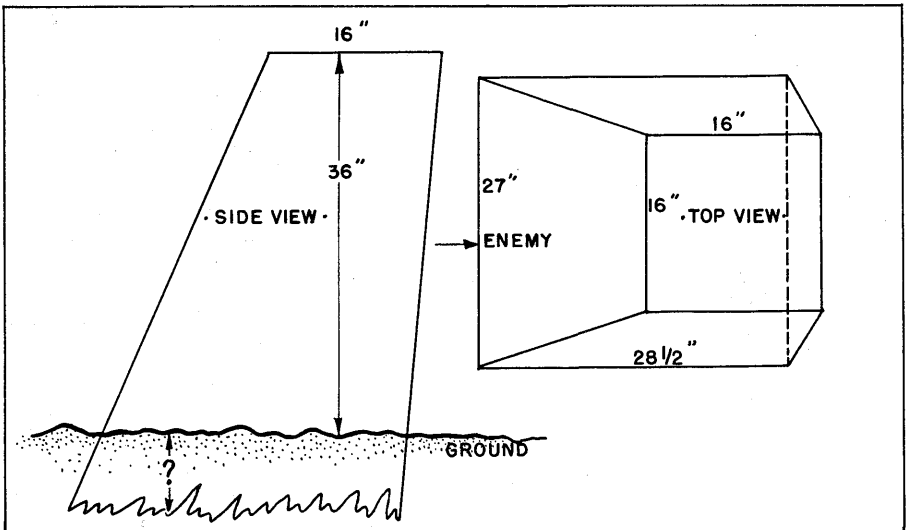


Destroyed Bridge over Mananga River on Highway No. 1.

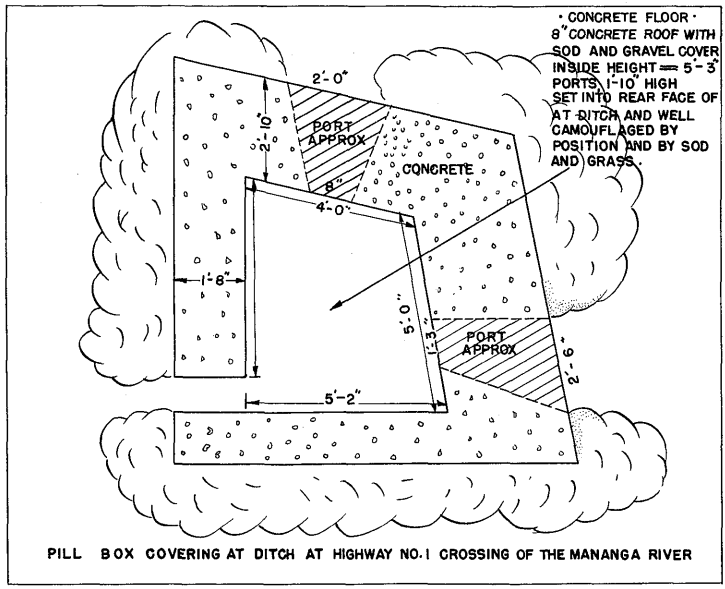
Dragon Teeth, Mananga River Bridge
(See Figure 22)



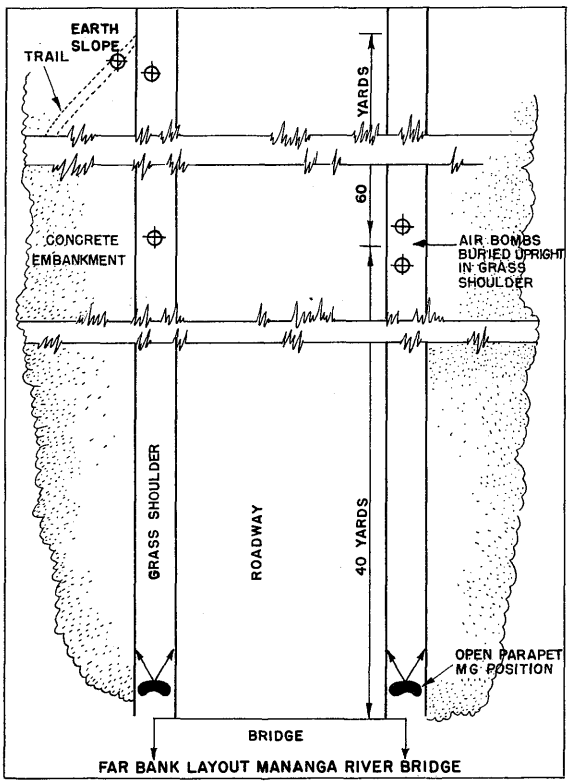
PATTERN-TETRAHEDRONS AT MANANGA RIVER BRIDGE



CONCRETE TETRAHEDRON-MANANGA R. BRIDGE-HIGHWAY NO. I



PILL BOX COVERING AT DITCH AT HIGHWAY NO.1 CROSSING OF THE MANANGA RIVER



FAR BANK LAYOUT MANANGA RIVER BRIDGE

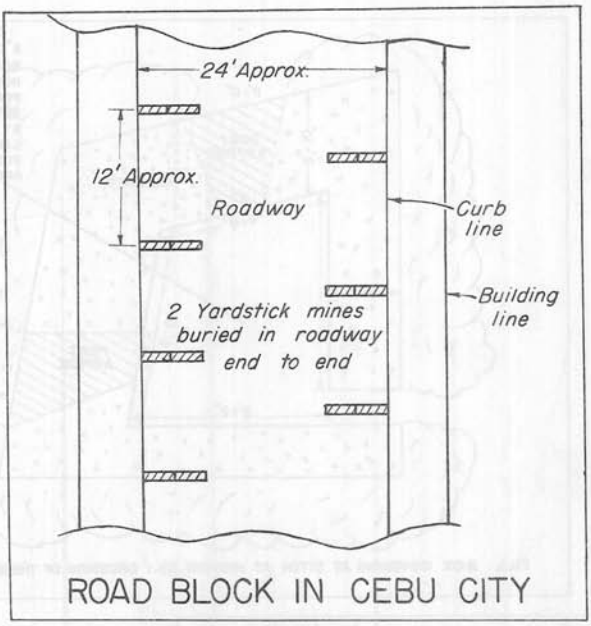
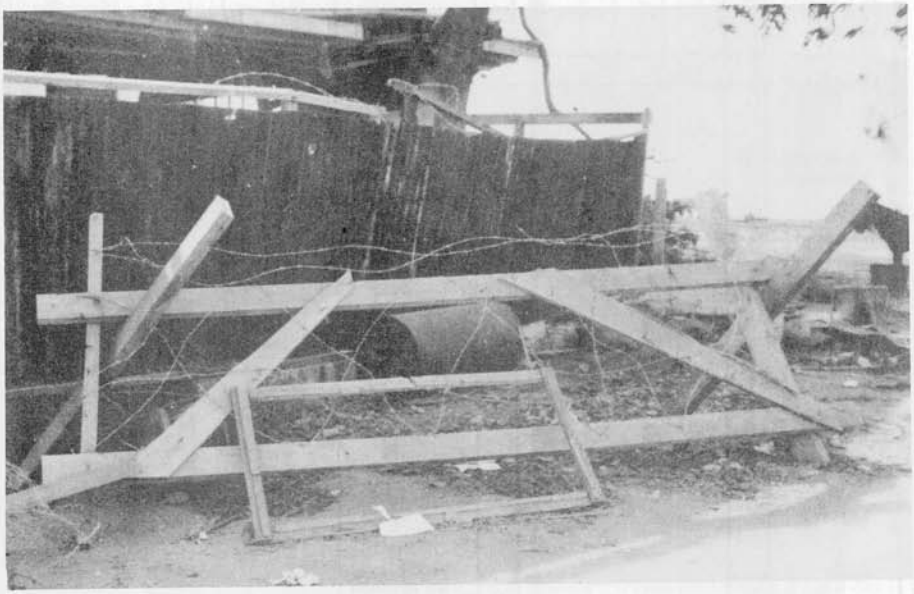


Figure 24



Type of Knife-Rest Used in Cebu City Street Blocks
Figure 25

Remains of Steel Rail Type Street Block, Cebu City
Figure 26

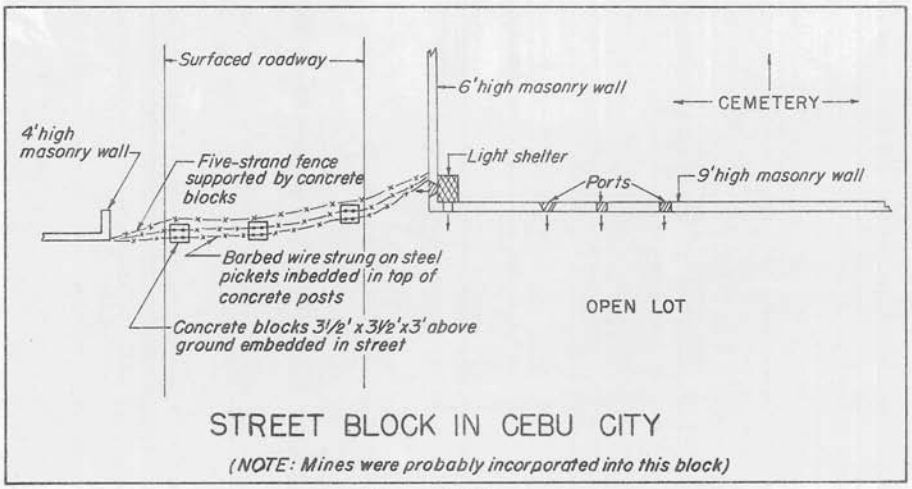
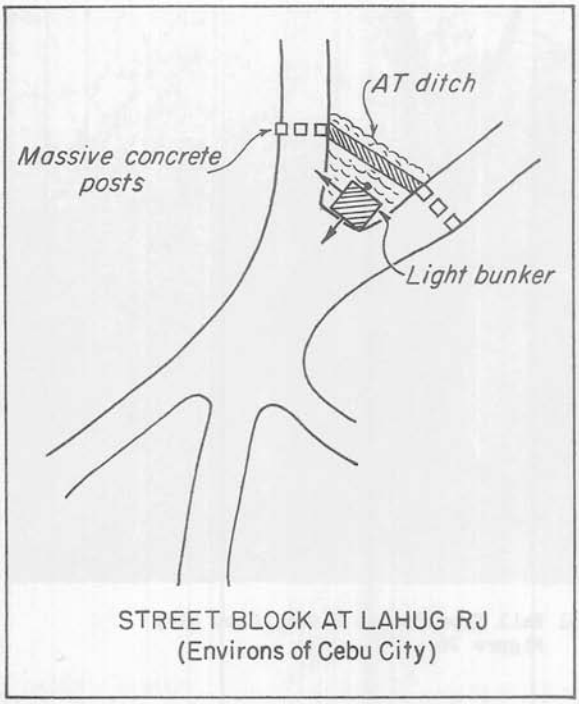
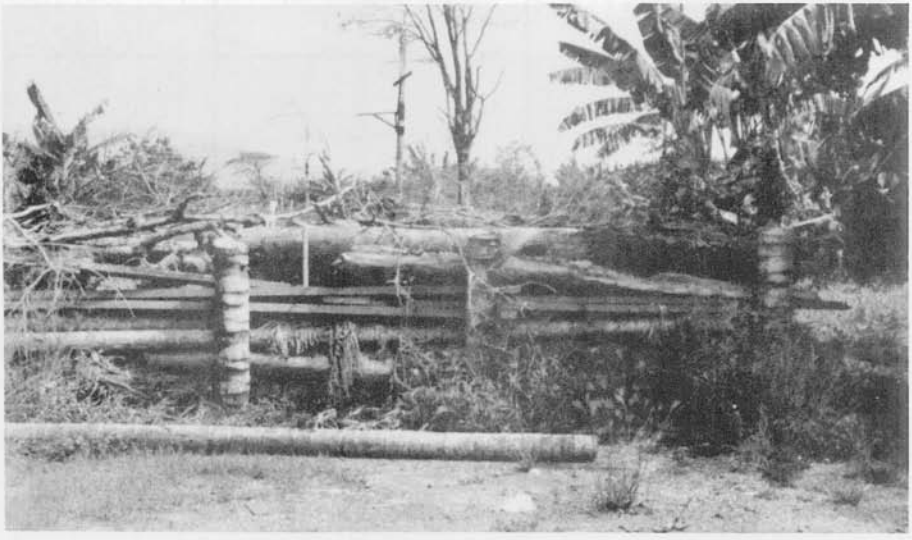


Figure 27 A

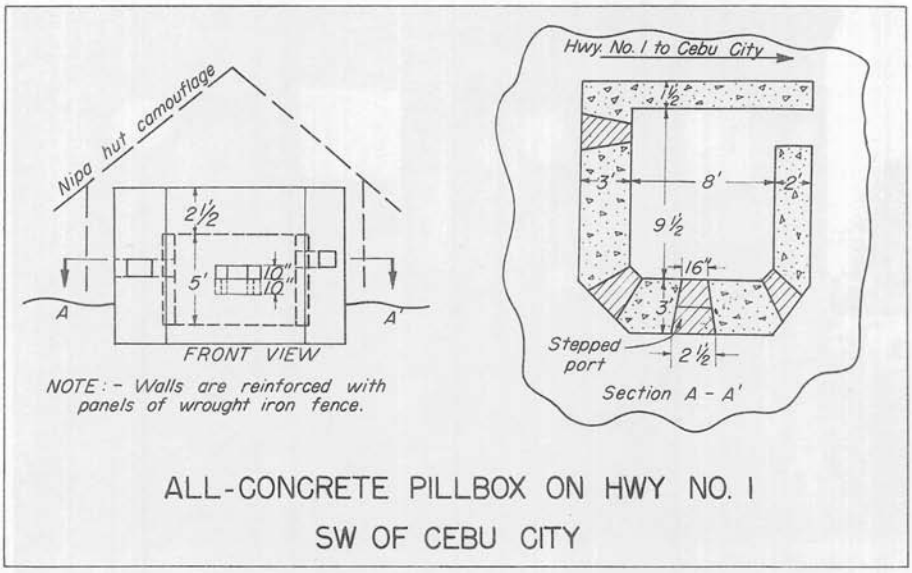


STREET BLOCK AT LAHUG RJ
(Environs of Cebu City)

Figure
27B

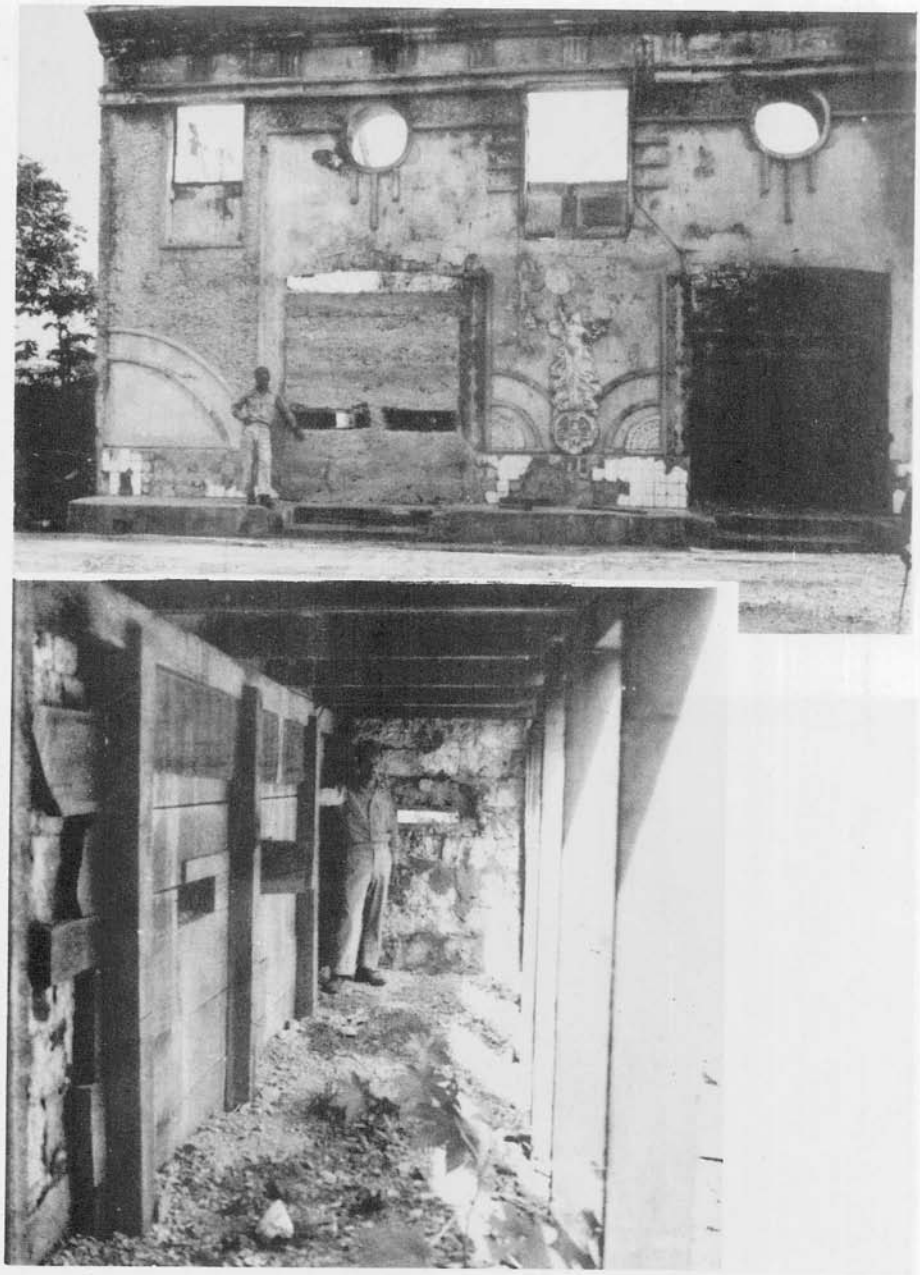


Log Crib Wall Obstacle, Cebu City
Figure 28



ALL-CONCRETE PILLBOX ON HWY NO. I
SW OF CEBU CITY

Concrete Pillbox, Cebu City
(See Sketch Above)



Two Views of Pillbox in Cebu City. The Roof Framing Supports an 18" Slab of Poor Concrete

ZAMBOANGA

This report supplements material presented on Pages 11 to 47 of Engineer Intelligence Bulletin No. 2, April 1945, and covers the period 20 March to 25 April 1945.

Enemy mine operations for the period were on a much smaller scale than in previous periods. The fact that our troops had left the existing road net and were advancing into the hills, building their own supply roads as they progressed, probably accounts for this reduction in enemy mine activity.

Figure 31 supplements the mine location chart previously published on Page 35 of Engineer Intelligence Bulletin No. 2. Figure 32 describes in detail the first enemy mine field encountered in the Zamboanga area in which a definite mine pattern was used. Note the wire fences marking the fields. These fences probably were designed to prevent animals from detonating mines. It will also be observed in Figure 31 that the Japanese laid many mine fields across country away from the roads.

During the period in question the enemy used the 75 mm artillery shell mine in large quantities and in such isolated areas that guerrilla forces were given instructions in the disarming and removal of this simple type of mine and were able to perform these tasks effectively.

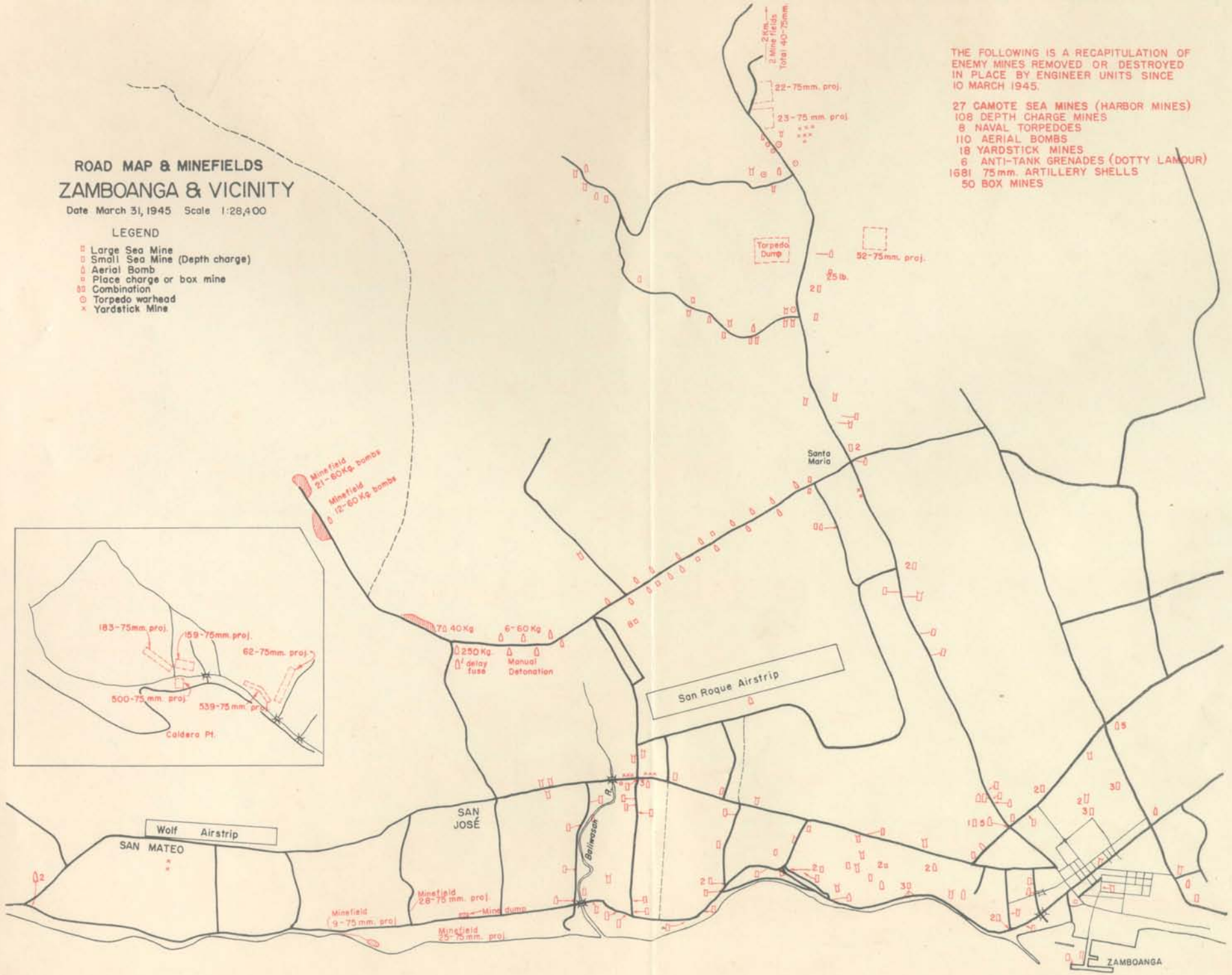
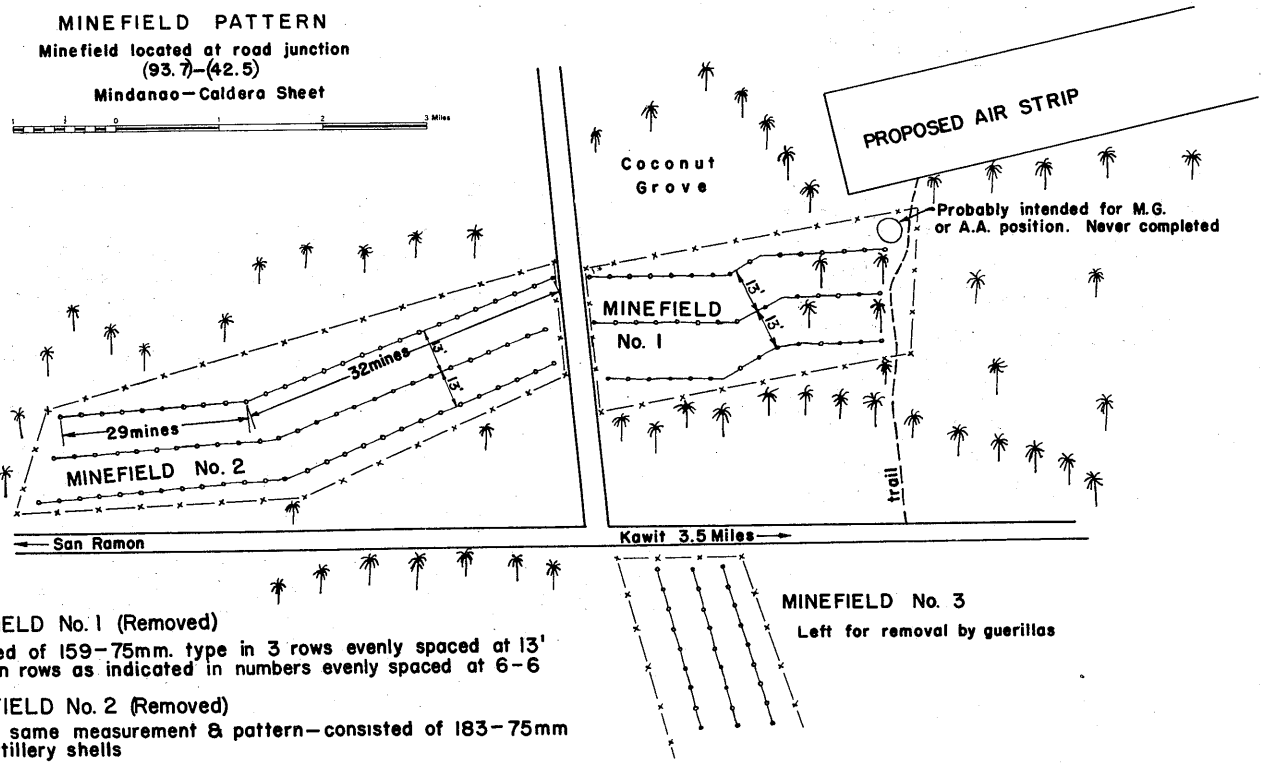


FIGURE 31 - PAGE 31



MINE FIELD No. 1 (Removed)

Consisted of 159-75mm. type in 3 rows evenly spaced at 13'
Mines in rows as indicated in numbers evenly spaced at 6-6

MINE FIELD No. 2 (Removed)

Follows same measurement & pattern-consisted of 183-75mm type artillery shells

MINE FIELD No. 3

6 mines removed from road shoulders-remainder posted for guerillas to complete
Undetermined number believed to follow same pattern as 1 &2
All mine fields surrounded by single strand of barbed wire approx. 3' in height.
Total mines removed 348

III ANTI-WITHDRAWAL FUSES

JAP NAVAL TORPEDO EXPLODERS USED IN LAND MINES

A. General:

Preliminary reports on the use of Japanese naval torpedo exploders in torpedo warhead land mines have been disseminated in Engineer Intelligence Bulletin No. 2, pages 17, 18, and 47. More detailed information is now available. The information presented herein is NOT intended as instructions for disarming such assemblies, but as convincing proof that NO PERSONNEL EXCEPT QUALIFIED NAVY EXPERTS SHOULD ATTEMPT TO DISARM, REMOVE, OR MOVE THESE EXPLODERS IF ATTACHED TO THE BOOSTER CHARGE, A WARHEAD, OR ANY OTHER EXPLOSIVE CHARGE. The only exception to the above rule is that if the tactical situation demands removal and if it is impracticable to destroy the warhead in place, it may be dragged out of position by tank-drawn cables. Although the two types of exploders to be described are equipped with postive and effective safety devices, internal modifications which are not visible externally and which render the safety devices either ineffective or cause detonation of the charge when the safety devices are manipulated, can be made easily in the field with simple tools. Although the modification made in the assemblies found at Zamboanga were easily discernable, the fact remains that the Jap is aware of the possibilities of these exploders and that he may be expected to use more refined techniques in the future.

B. Type 90 Model 2 Exploder in Type 91 Warhead:

1. Description and Internal Functioning:

Figure 33 a consists of general views of components of the exploder. The exploder-booster assembly may be broken down into four main components:

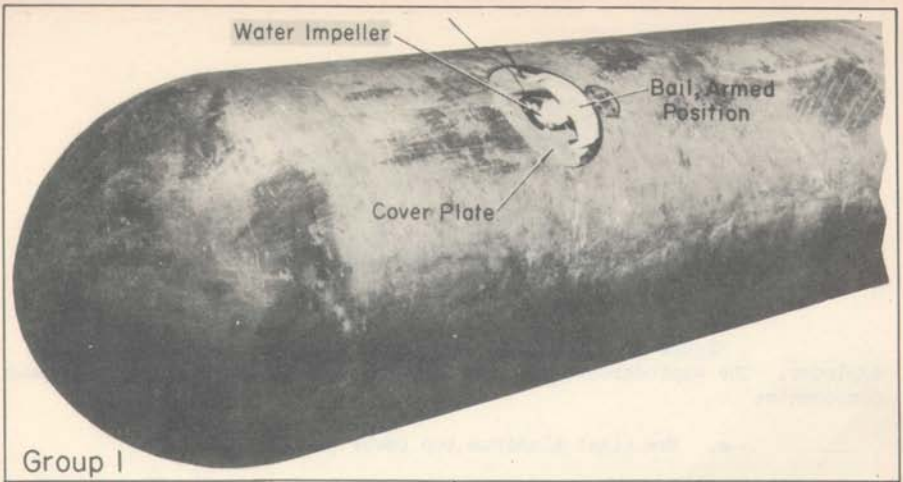
a. The light aluminum top cover plate.

b. The bronze top casting, upon which are mounted the water driven arming impeller, the gear train to the arming spindle ("b", Figure 33 b), the arming spindle ("c", Figure 33 b), and the positive safety device of the assembly ("d" & "e", Figure 33 b)

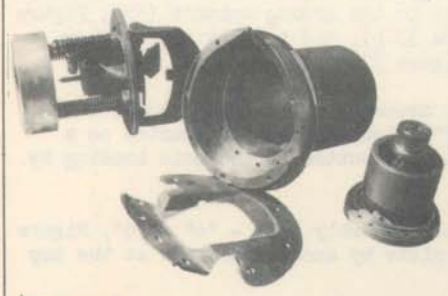
c. The inertia exploder assembly which is housed in the cylindrical aluminum main housing ("f", Figure 33 b) and mounted on a brass base plate which is connected to the bottom of the main housing by screws.

d. The cap-primer-booster assembly ("r" - "s" - "q", Figure 33 b) which is screwed into the base plate by annular threads at the top of the body.

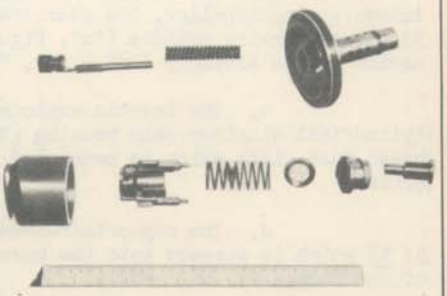
Reference Figure 33 b, the base plate "g" and the striker housing "g'" are fastened together rigidly. The striker shaft "m" is threaded loosely to a striker headpiece "n". The striker shaft is free to revolve under action of the arming spindle "c", the shank of which engages loosely inside the square cross-sectioned cavity in the striker shaft. The headpiece "n" cannot revolve because of two attached lugs which run in vertical slots cut into the striker housing "g'". The striker spring "p" is contained by the striker headpiece at one end and on the other end by the striker spring retaining plug "t" which screws inside the striker housing. The locking sleeve assembly "i" rests on the floor of the heavy inertia cup "h" and in its normal position retains the two ball bearing detents "o", thus preventing downward movement of the striker headpiece. Tipping of the inertia cup by an impact from any direction causes upward movement of the locking sleeve, allows the detents to fall outward, and releases the striker assembly "m - n". The locking sleeve is held in place by the spring "j", which bears against the nut "k" at the upper end of the spring.



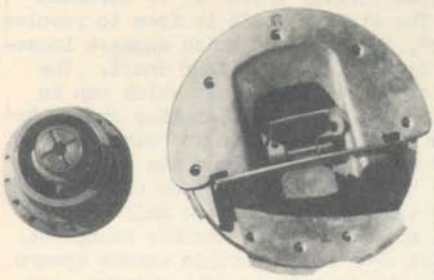
Group 1



Group 2



Group 3



Group 4

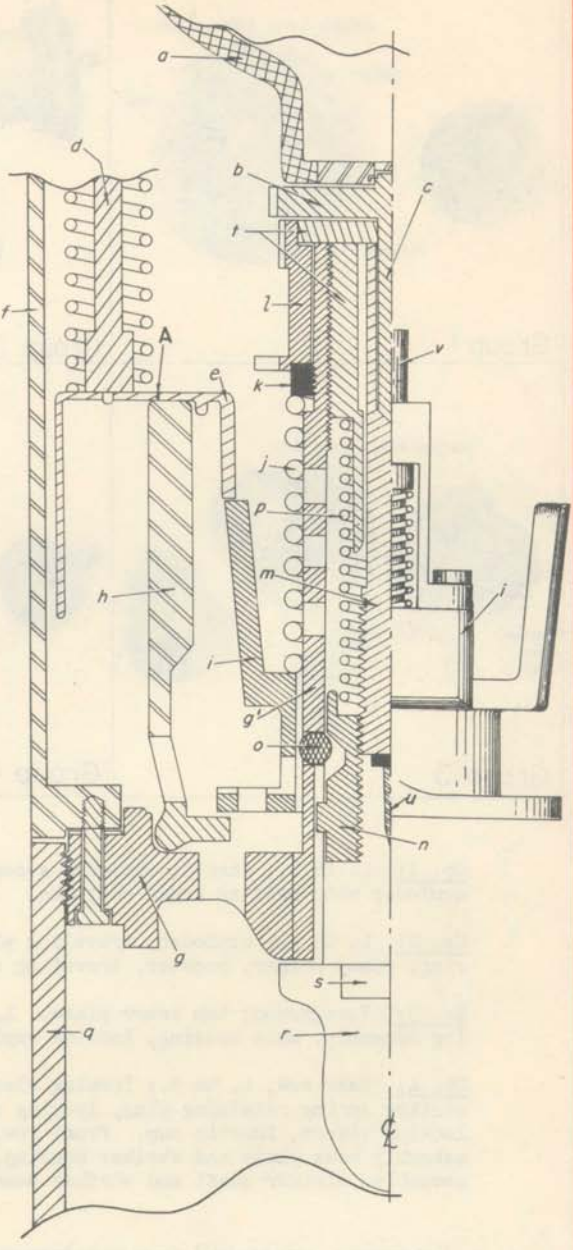
Gp. 1: Torpedo used at Zamboanga. Note wire to bail and wire leading to outside; both were connected to locking sleeve.
Gp. 2: Foreground; top cover plate. L. to R.; top casting assembly, main housing, inertia exploder assembly.
Gp. 3: Inertia exploder assembly parts. Rear, L. to R.; striker spring retaining plug, safety sleeve, locking sleeve spring nut, locking sleeve spring, locking sleeve, inertia cup. Front, L. to R.; inertia assembly base plate and striker housing, striker spring, striker shaft, striker headpiece.
Gp. 4: L. to R.; inertia exploder assembly, top view with bail in safe position.

TYPE 90, MODEL 2 TORPEDO EXPLODER
- PARTS -

FIGURE 33A-PAGE 35

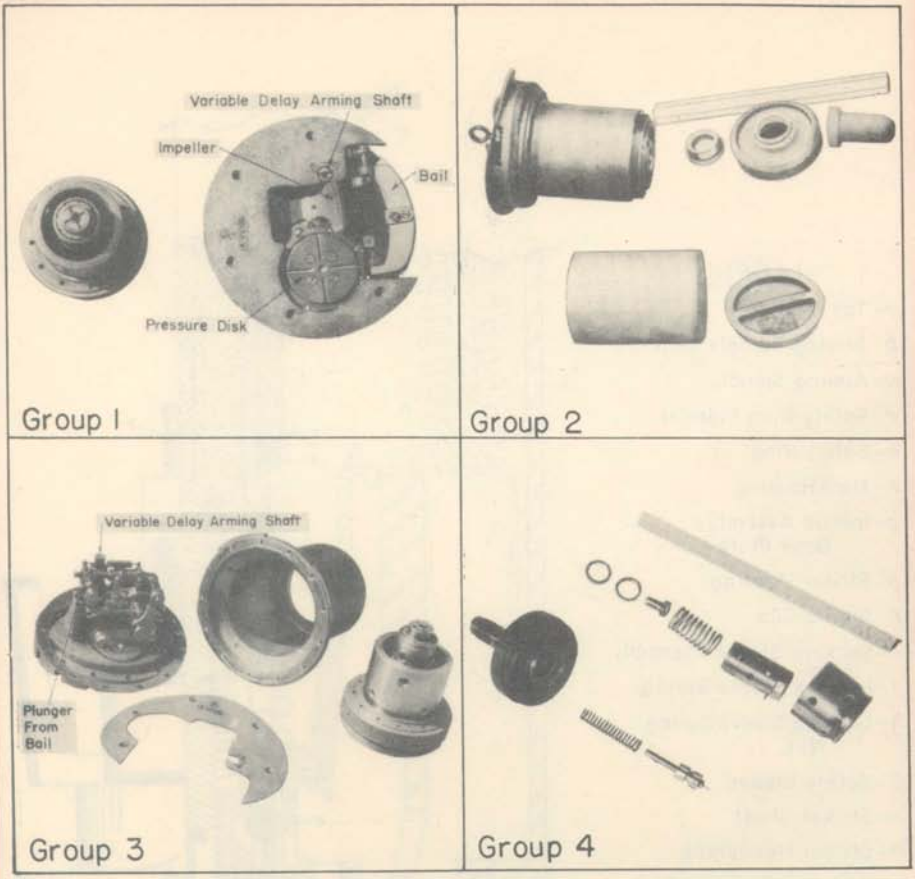
-LEGEND-

a - Top Casting
b - Arming Spindle Gear
c - Arming Spindle
d - Safety Ring Plunger
e - Safety Ring
f - Main Housing
g - Inertia Assembly Base Plate
g' - Striker Housing
h - Inertia Cup
i - Locking Sleeve Assembly
j - Locking Sleeve Spring
k - Locking Sleeve Spring Nut
l - Safety Sleeve
m - Striker Shaft
n - Striker Headpiece
o - Ball Bearing Detents
p Striker Spring
q - Booster Container
r - Primer
s - Explosive Cap
t - Striker Spring Retaining Plug
u - Firing Pin
v - Locking Sleeve Plungers



PARTIAL SECTION, TYPE 90, MODEL 2, JAPANESE TORPEDO EXPLODER

FIGURE 33B-PAGE 36



Gp. 1: L. to R.; inertia exploder assembly, top view of exploder with bail in armed position.

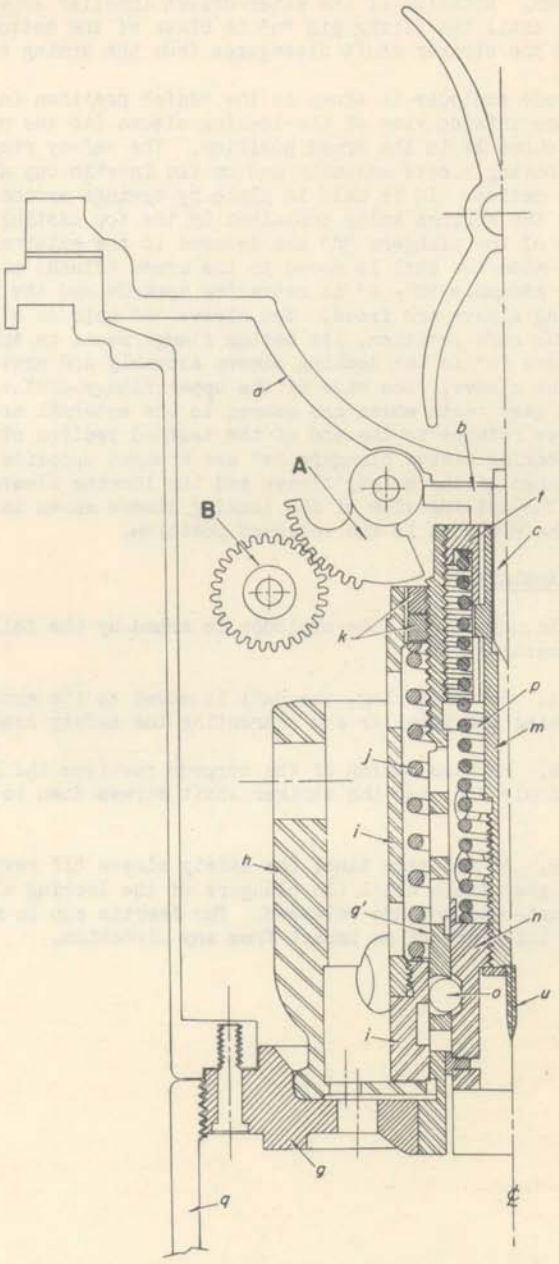
Gp. 2: L. to R.; exploder, traveling plug, connecting ring, dummy primer, booster, traveling cap for booster.

Gp. 3: Foreground; top cover plate. L. to R.; top casting assembly, main housing, inertia exploder assembly.

Gp. 4: Rear row, L. to R.; locking sleeve spring nuts (2), striker spring retaining plug, locking sleeve spring, locking sleeve, inertia cup. Front row, L. to R.; inertia assembly base plate and striker housing, striker spring, assembled striker shaft and striker headpiece.

"CEBU TYPE" TORPEDO EXPLODER
-PARTS-

FIGURE 34A-PAGE 37



PARTIAL SECTION "CEBU" TYPE TORPEDO EXPLODER
(For legend of parts see figure 33b)

FIGURE 34B-PAGE 38

The square cross-sectioned arming spindle "c" rotates under the influence of the gear "b" which is geared directly to the external water-driven impeller. Rotation of the water-driven impeller screws down the striker shaft until the firing pin "u" is clear of the bottom face of the headpiece and the striker shaft disengages from the arming spindle.

The torpedo exploder is shown in the "safe" position in Figure 33 b, except that the outside view of the locking sleeve (to the right of the center line) shows it in the armed position. The safety ring "e" bears both on the locking sleeve assembly and on the inertia cup and prevents firing of the device. It is held in place by springs around the four plungers "d", the springs being contained by the top casting and the safety ring. Two of the plungers "d" are levered to the external bail (Figure 33 a) so that when the bail is moved to the armed (flush) position, the entire safety assembly "d - e" is retracted upwards and the inertia cup and the locking sleeve are freed. The sleeve "l" acts as a delay safety device. In the safe position, its bottom flange rests on and holds down the two plungers "v" in the locking sleeve assembly and prevents vertical movement of the sleeve. One side of the upper flange of the sleeve "l" is provided with gear teeth which are geared to the external arming impeller. When the sleeve rotates to the end of the toothed section of its upper flange, the locking sleeve plungers "v" are brought opposite cut-outs in the bottom flange of the safety sleeve and the locking sleeve is released for action. The outside view of the locking sleeve shown in Figure 33 b illustrates the plungers in the released position.

2. Arming:

In normal use, the exploder is armed by the following processes:

a. Before firing, the bail is moved to its armed (flush) position, freeing the impeller and retracting the safety assembly "d - e".

b. Forward motion of the torpedo revolves the impeller and, hence, the spindle "c", and the striker shaft screws down to its armed position.

c. At the same time, the safety sleeve "l" revolves under action of its gear train until the plungers of the locking sleeve are opposite the cut-outs and are released. The inertia cup is now free to act under the influence of an impact from any direction.

3. Employment as a Booby Trap Firing Device:

There are several ways the exploder may be booby trapped without any external evidence to indicate that it is dangerous. Two methods are presented below (NO ALLIED PERSONNEL SHOULD ATTEMPT TO SET SUCH TRAPS):

a. Remove the top casting assembly and arm the striker assembly manually. Release the locking sleeve plungers by rotating the safety sleeve "l" by hand. Rotate the bail to its armed (flush with top) position and secure it by a safety pin. At about the point "A" (Figure 33 b) on the bottom surface of the safety ring, braze a short, pointed brass contact plug of such length that in the retracted position of the safety ring the plug will barely clear the top periphery of the inertia cup. Carefully assemble the top casting assembly to the rest of the exploder. In this case, if the bail is released to its "safe" position, the plug will tip the inertia ring by pressure at one point, the locking sleeve will be lifted, and the firing pin released.

b. Place the exploder in a vertical position. Remove spring "j". Arm the striker assembly manually as in sub-paragraph a, above. Remove the safety ring "e". Reassemble carefully. In this case all safety and delayed arming devices are rendered useless. Removal of the spring "j" makes the exploder so sensitive that a moderate jar or even careful displacement of the exploder from its vertical position will release the firing pin.

C. Unidentified Torpedo Exploder Found at Cebu:

An inertia type torpedo exploder similar to the type found on Zamboanga was captured at Cebu (Figure 34 a & b). It was not used in a land mine but is described because it is suitable for employment in the same manner as the Type 90, Model 2, Exploder.

The inertia firing mechanism of this type has the same components as the Type 90 with minor variations. The principal variations are in the inertia cup which has a circular instead of an oval base and in the locking sleeve which is tubular and has no arms or other fixtures. The arming of the striker assembly is accomplished in the same manner in both types.

The safety delayed arming assemblies of the two types are almost entirely different except for the method of arming the firing pin. The safety cam "A" (Figure 34 b) is the only postive safety device. As shown in the figure, it holds down the locking sleeve. It is actuated by two

power trains. One train, a delayed arming train, is operated by the rotation of the water impeller. After a variable number of revolutions of the impeller, cam "A" revolves so as to clear the locking sleeve. The other train, a safety device, is a complicated lever-plunger-gear-cam arrangement which is operated by moving the bail from the armed to the safe position. Since the delayed arming train leads to cam "A" through the ratchet gear "B" (Figure 34 b), whatever the status of the delayed arming train, moving the bail to the safe (vertical) position will return cam "A" to the safe position without interference.

Two other refinements, not present in the Type 90 Exploder, are incorporated into this device. A vertical shaft mounted in the top casting serves as a variable delay arming device and is part of the delayed arming train. Fixed to the lower end of this shaft is a circular cam with a section cut away so that when a lever arm riding on it falls off into the cut-away portion, a clutch in the delay arming train is engaged, and the train goes into operation. The vertical shaft is geared to the impeller and the number of revolutions required to engage the delayed arming train can be regulated at will at any stage of the operation by setting the shaft in the desired position. The other refinement consists of an external brass disk floating on a rubber diaphragm mounted on the top casting (Figure 34 a) and connected through the diaphragm by screws to a contact point inside the body. The assembly is held outward against the diaphragm by a very heavy spring. If pushed inward by a heavy pressure, the contact point bears on a lever which actuates another free lever, which in turn rotates cam "A" to a safe position and holds it there. It is presumed that this device is designed to prevent operation of the exploder if the torpedo dives too deep.

It is obvious that this exploder can be booby trapped by methods similar to those suggested for the Type 90 and that A CHARGE FUSED BY THIS EXPLODER SHOULD NOT BE HANDLED OR MOVED, EXCEPT IN CASES OF EMERGENCY, AND THEN ONLY BY CABLES DRAWN BY A TANK FROM A SAFE DISTANCE WITH FULL EXPECTATIONS OF IT EXPLODING. In case such action is necessary, extreme caution should be used in connecting the cables.

D. Precautions:

All personnel should be able to recognize these two torpedo exploders and, upon discovery of a charge fused with one, post a guard and call a bomb disposal or mine expert. As an example of the power of a warhead, one exploded on the ground surface at Zamboanga made a crater 25 feet in diameter and 12 feet in depth.

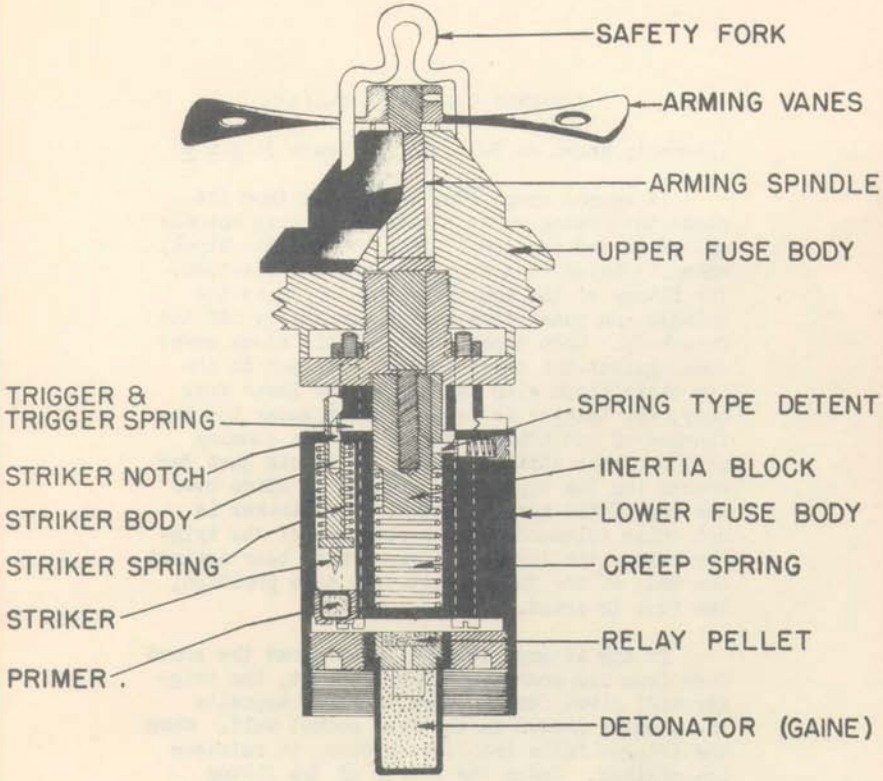
JAPANESE TAIL FUSE, E-1(a)

(Formerly known as B-7(a))(See Figure 35 a & b)

In normal operation, on release from the plane the arming vanes rotate the arming spindle clockwise and unscrew it from the inertia block, which is keyed to the body to prevent rotation. The flange of the arming spindle prevents the spindle and vanes from coming completely off the fuse body. Upon impact, the inertia block moves down against the creep spring. As soon as the top sinks flush with the top of the lower fuse body, the trigger is free to pivot under the influence of the trigger spring and the camming action of the striker notch. It pivots just far enough for the lip on the trigger to slide over the top of the inertia block. The striker is not quite released because rotation of the trigger brings the longer trigger arm to bear against the wall of the fuse pocket. In this position, the fuse is armed.

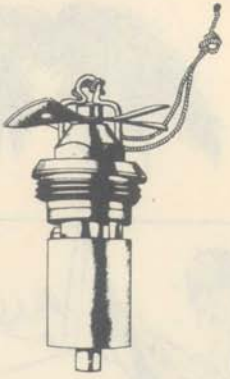
If any attempt is made to withdraw the armed fuse from its pocket by unscrewing it, the trigger will pivot further when it comes opposite the annular groove in the fuse pocket wall. When the trigger falls into this groove, it releases the striker. Under the action of the firing spring, the striker will fire the primer, setting off the explosive train.

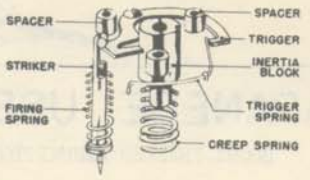
The visible portion of this fuse, as it is seated in the bomb, is different from any other Japanese fuse body known by this office. The fuse can be armed easily by manual operation. NO ONE SHOULD ATTEMPT TO UNSCREW THIS FUSE FROM THE BOMB UNDER ANY CONDITIONS.

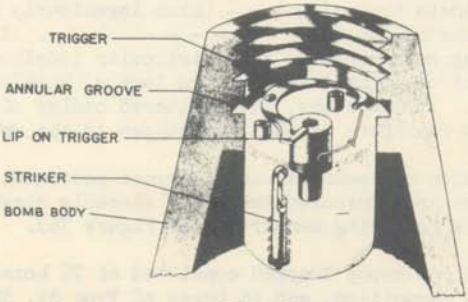


JAPANESE TAIL FUSE E-1 A
ANTI-WITHDRAWAL
(FORMERLY KNOWN AS JAPANESE TAIL FUSE B-7(a))

FIGURE 35A-PAGE 43



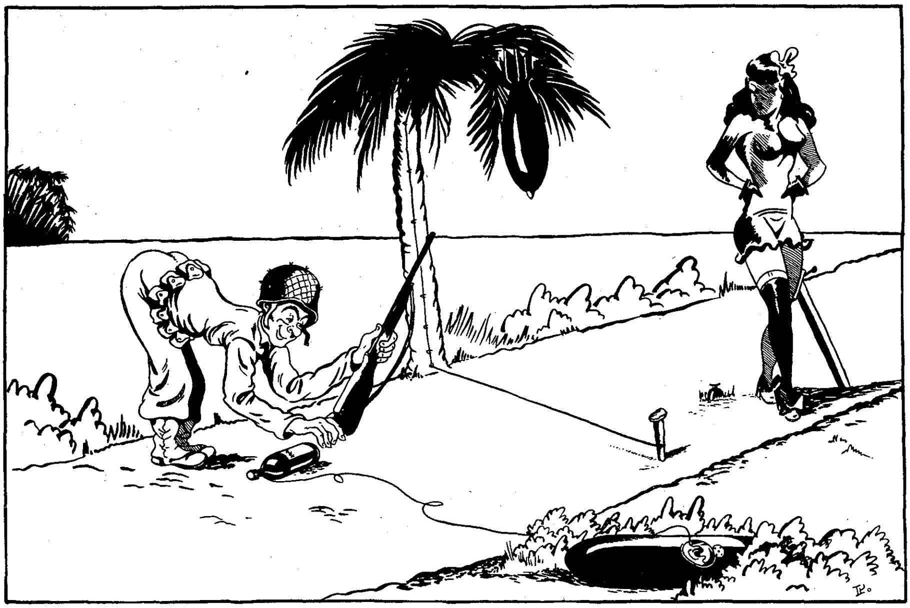




FIRED POSITION

JAPANESE TAIL FUSE E-1A
ANTI-WITHDRAWAL
(FORMERLY KNOWN AS JAPANESE TAIL FUSE B-7(a))

FIGURE 35B-PAGE 44



IV JAPANESE USE OF MINES

BOOBY TRAPPED AMMUNITION DUMP (LUZON)

The following extract is taken from XIV Corps Periodic Report No. 92:

"Retiring Japanese troops on - - - Luzon ingeniously booby trapped three sizeable stacks of munitions - - - - - - - - - - -. The existence of concealed detonating mechanisms in this particular location was not realized until the price of inquisitiveness and lack of knowledge on the subject had been paid. At the scene, the shattered bodies of two civilians and a dog were grim reminders of what may happen to the unwary and unwise.

"An investigation by technical intelligence personnel of the remaining munitions in the area revealed two other sizeable stacks to be cleverly booby trapped in the following manner: (See Figure 36).

"The munitions booby trapped consisted of 75 boxes of Type 99, 7.7 mm rifle and MG ammunition, and 15 boxes of Type 89, 50 mm grenades. The total of 90 boxes was neatly stacked six boxes high within a revetment cut into the side of the hill. This revetment was only large enough for the munitions. Entrance and encirclement was not possible on the ground level. Inspection could be made only from one end and above. From atop the embankment, the site resembled a poor attempt at concealment of a bunker. Loose dirt, twigs, and grass were thrown on top of a roof which consisted of two sheets of corrugated iron and a plywood door, presumably from one of the dwellings near by. In this apparent casualness of preparation

lay the shrewdness of the act. Fastened beneath the main components of the roof to long branches were the strings of six pull type friction igniters fixed in improvised box type mines. These mines were placed directly on top of the stacks of munitions and carried the entire weight of the roof. Therefore, any attempt to move any portion of the covering material would probably pull at least one of the igniters, detonate the picric acid contents of the box mine, and initiate the explosion of the ammunition.

"In the same area one of these mines was placed in an empty wooden box with a camouflage net wrapped around it concealing the mine entirely. The friction igniter was tied to the net. Should the net be unrolled, the igniter would undoubtedly be pulled."

DEPTH CHARGE ROAD BLOCK - CEBU CITY

(See Figure 37)

In the harbor area at Cebu City, eleven road blocks of the same general pattern were found. They consisted of combinations of three elements, as follows:

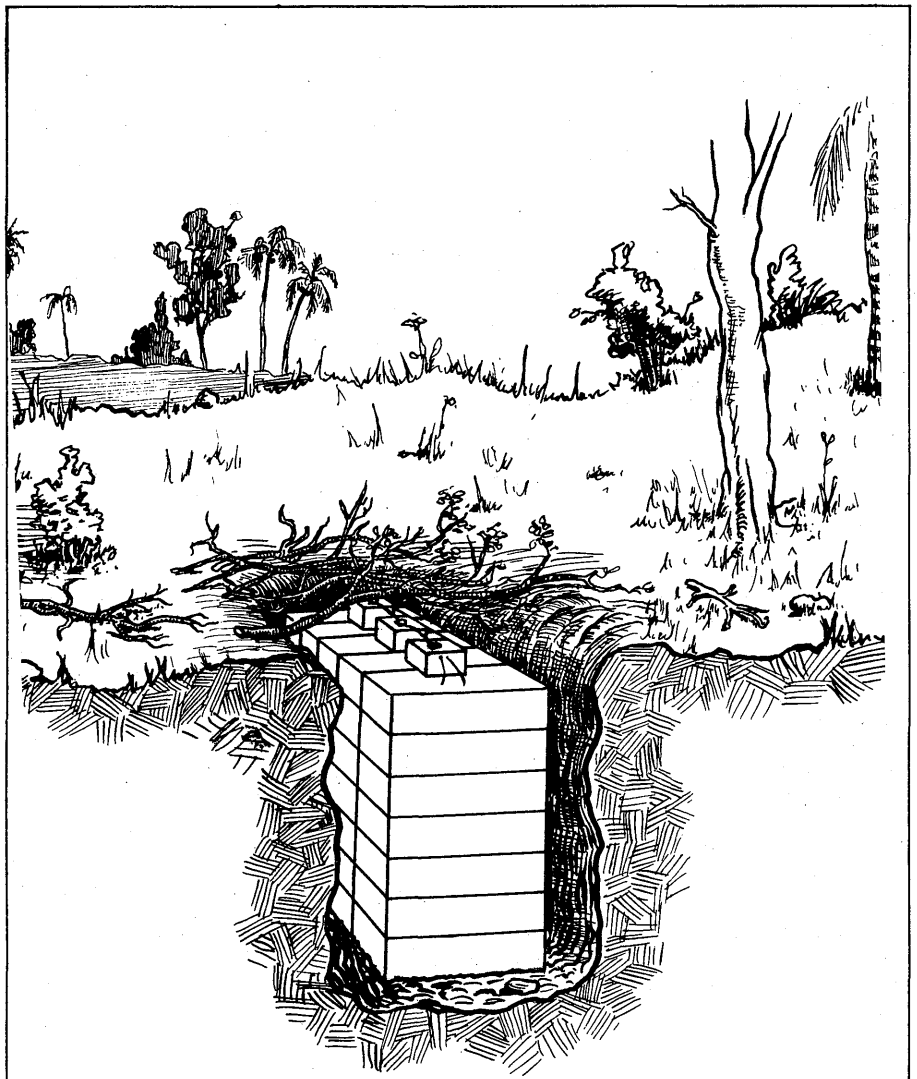
a. One or two depth charges buried in the street, placed in nearby bomb craters, or placed on the ground along side the block and camouflaged. These were fused with standard Japanese electric blasting caps.

b. One or more actuating assemblies, consisting of the standard electro-chemical lead horn type fuse assembly for the Japanese single-horn beach mine. Generally, the lead horn assemblies were set into the top of concrete tetrahedrons 8" in height and about 12" square at the base and 10" square at the top. A lead-covered two wire electrical cable entered the concrete on the top surface of the tetrahedron and at the base of the lead horn. This cable was connected to the leading wires of the electric blasting cap in the depth charge.

c. Two or three heavy timber and barbed wire knife-rest sections.

Often the concrete tetrahedrons were buried beneath the wire obstacles and were attached by a trip wire to either the wire obstacle or to each other. In such cases, the mine could be detonated either by crushing the lead horn by pressure or by bending the horn by exertion of a strong pull on the trip wire.

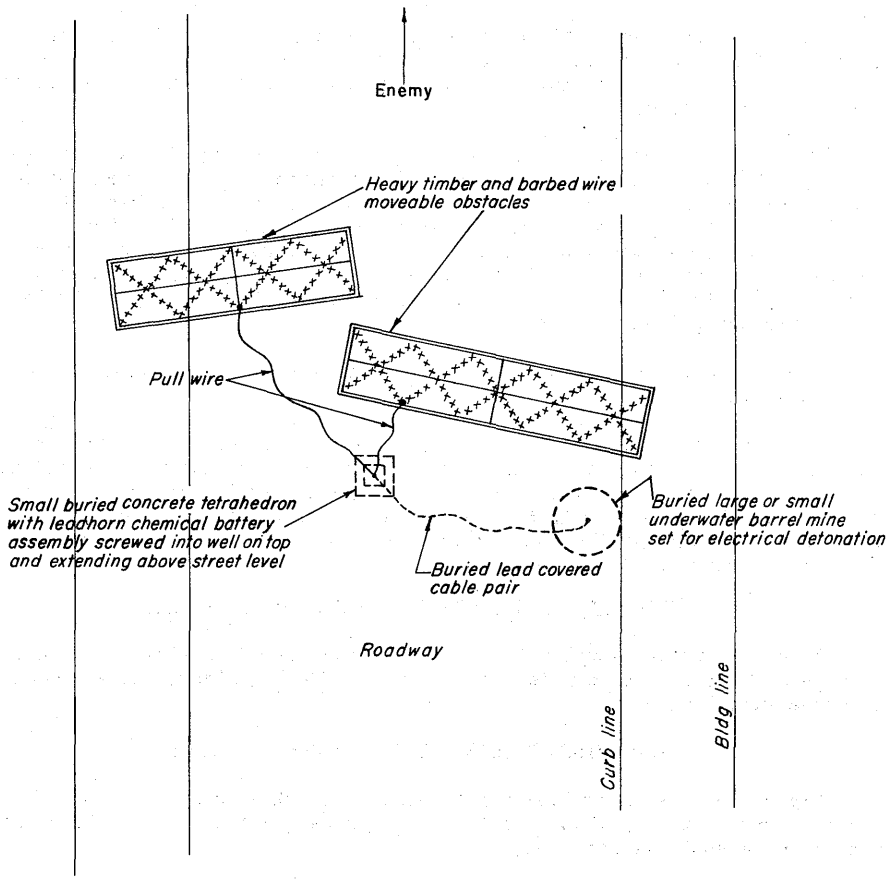
These road blocks were analysed easily and were disarmed by first cutting the electric leading wires, then unscrewing the lead horn in a clockwise direction and removing the electric fuse from the fuse well of the depth charge. Finally, the depth charge, wire obstacles, and concrete tetrahedrons were removed from the roadway.



BOOBY TRAPPED AMMUNITION DUMP

END VIEW OF REVETMENT CUT AWAY SHOWING AMMUNITION WITH BOX MINE ON TOP

FIGURE 36-PAGE 47



OPERATION: Lead horn is broken by pull on wire obstacle or by running over it. Current is generated in lead horn battery assembly and transmitted to electrical detonator of underwater mine.

NOTE: This is drawn from a verbal description. Variations of this block were reported which had two or more small tetrahedrons with lead horns and mine set in center of roadway.

STREET OBSTACLE
CEBU CITY

FIGURE 37–PAGE 48

IMPROVISED 'ARTILLERY SHELL' LAND MINE

Figure 38 is a schematic drawing of a typical improvised pressure type land mine found on the island of Jolo, Sulu Archipelago, P.I. The mines, as placed, were not concealed nor camouflaged and consequently were easily detected and removed.

The mine is constructed by inverting an artillery shell case over the shell which has the nose fuse and nose plug removed. The fuse well of the projectile nose rests against the black powder booster in the base of the shell case. An open top wooden box, inverted and with a nail driven through it, is then placed over the base of the shell case so that the nail rests on the shell case primer. This complete assembly is then placed as shown in the figure to function as a pressure type road mine, resting approximately flush with the ground surface.

The following procedure is suggested tentatively as a method for removal of such a mine:

Check for external booby trapping by excavation and for internal pull device by careful visual inspection. Remove wood cover if careful manipulation indicates that it is free. If the primer is intact, remove the shell case. The mine should now be safe to handle. If the wooden cover does not lift freely, or if the shell case primer has been tampered with, destroy in place if possible.

ELECTRICALLY FIRED CONTROLLED ROAD MINE (PANAY)

Figure 39 is self-explanatory. This principle of pulling a bare wire through a metal tube to complete an electrical firing circuit is a common Japanese expedient.

IMPROVISED RELEASE TYPE ROAD MINE - NEGROS

Figure 40 is self-explanatory. Where light wire or cord is used for the trip wire, it is probable that the trip wire would break upon being hit and the mine would be actuated.

PRESSURE BAR USED IN ROAD MINE (NEGROS)

Figure 41 is self-explanatory.

JAPANESE MINE ROAD BLOCK (NEGROS)

Figure 42 is self-explanatory.

CONTROLLED MINE FIELD (PANAY)

Figure 43 is self-explanatory.

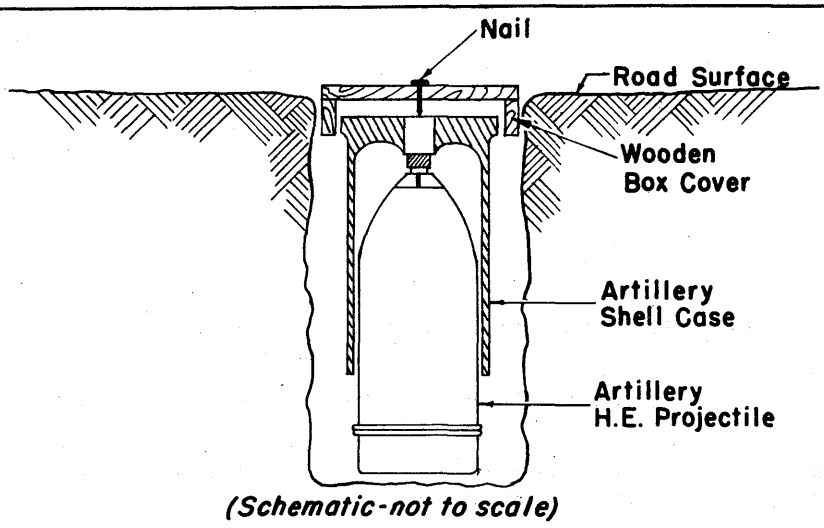
JAPANESE TYPE 90 FLARE IGNITER USED AS A PULL FIRING DEVICE FOR AERIAL BOMB MINES (See Figure 44)

The following report is bases on XI Corps G-2 Weekly Report No. 7:

On Luzon, numerous aerial bombs were found used as land mines and booby traps. A common improvisation was the use of the Japanese Type 90 Flare Igniter with 50, 100, and 250 kg. bombs.

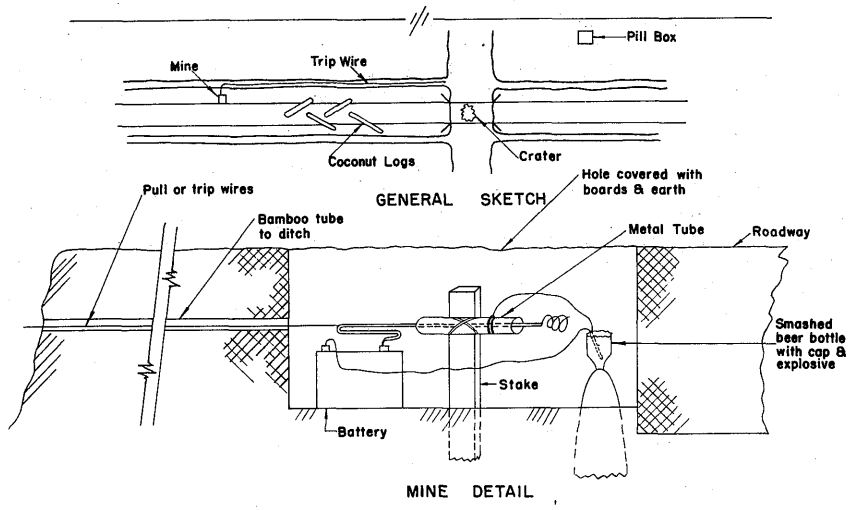
This igniter requires only minor modification to make it suitable for use in a bomb. The only components of the Type 90 Flare used are the conical cap, a thin brass disk, and the striker mechanism. In addition, a blasting cap, packing material to act as a filler around the striker mechanism, and a little powdered picric acid, are required. The packing material is composed of toilet tissue wrapped tightly around the striker mechanism. Friction tape is used to keep the paper from unwinding. The entire device is wedged into the bomb nose. The cone is wired to the bomb by utilizing the two screw holes on the cone and the suspension lugs and band on the bomb. The brass disk prevents the striking mechanism from being pulled from the bomb.

A fairly stout pull on a well placed trip wire is sufficient to pull the striker release assembly from its housing. When the assembly clears the housing, the striker release arm fly apart and the striker is released. The blasting cap is taped to the percussion cap and acts as a booster. The cap is supplemented by powdered picric acid dropped into the gaine pocket before the entire device is inserted.



IMPROVISED 'ARTILLERY SHELL' LAND MINE

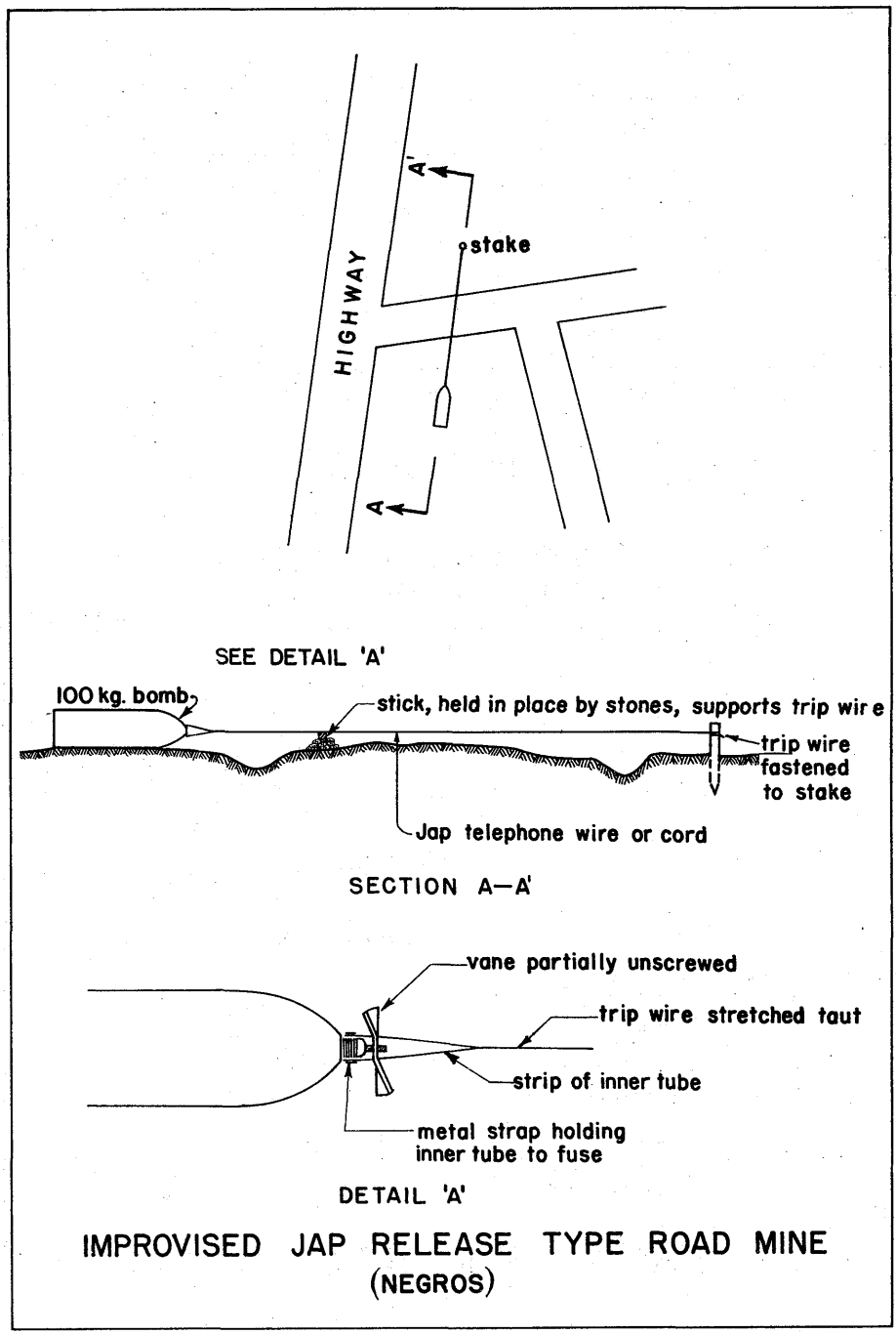
FIGURE 38



IMPROVISED JAPANESE MINE, ELECTRICALLY FIRED

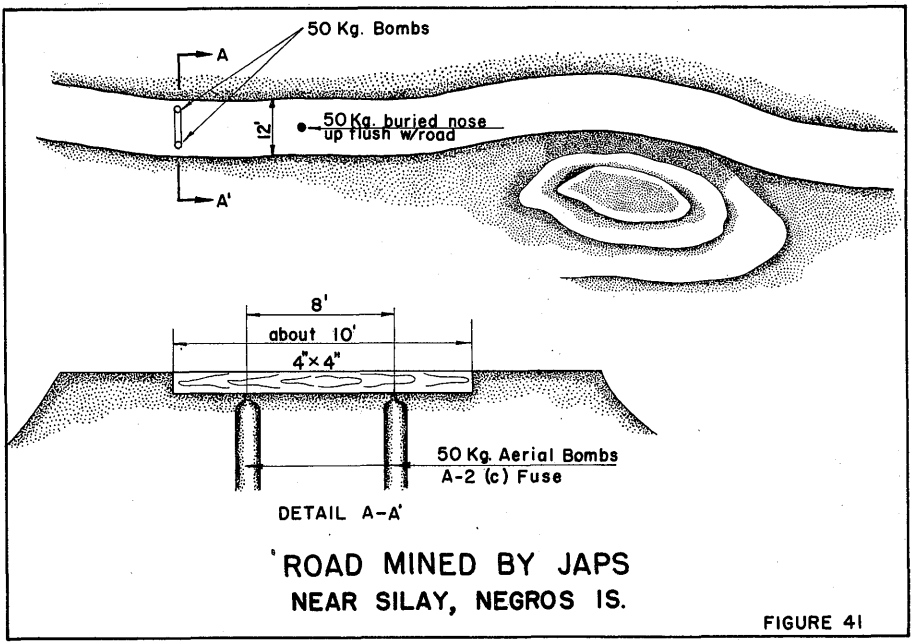
PANAY

FIGURE 39



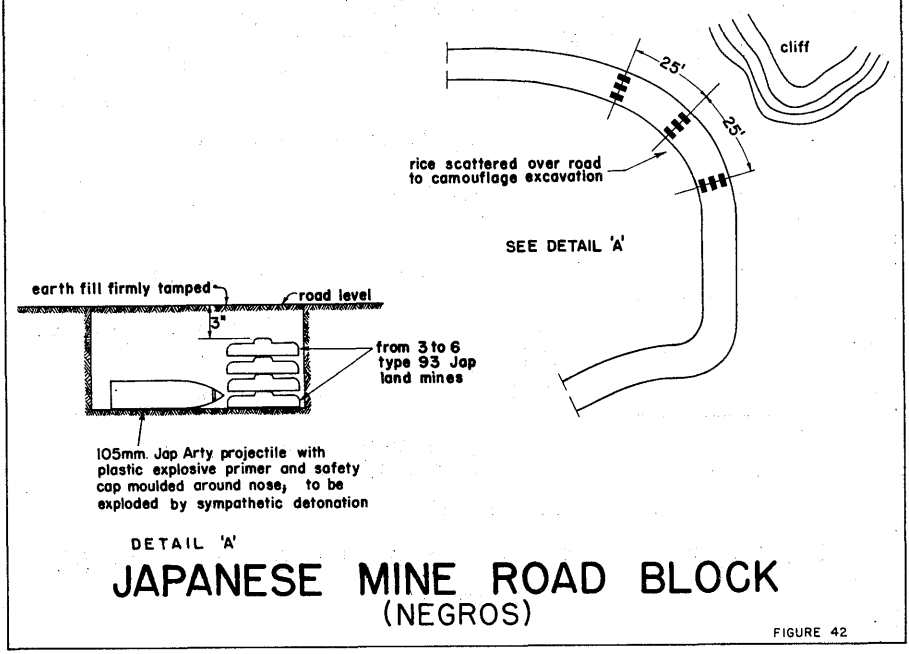
IMPROVISED JAP RELEASE TYPE ROAD MINE
(NEGROS)

FIGURE 40-PAGE 52



ROAD MINED BY JAPS
NEAR SILAY, NEGROS IS.

FIGURE 41



JAPANESE MINE ROAD BLOCK
(NEGROS)

FIGURE 42

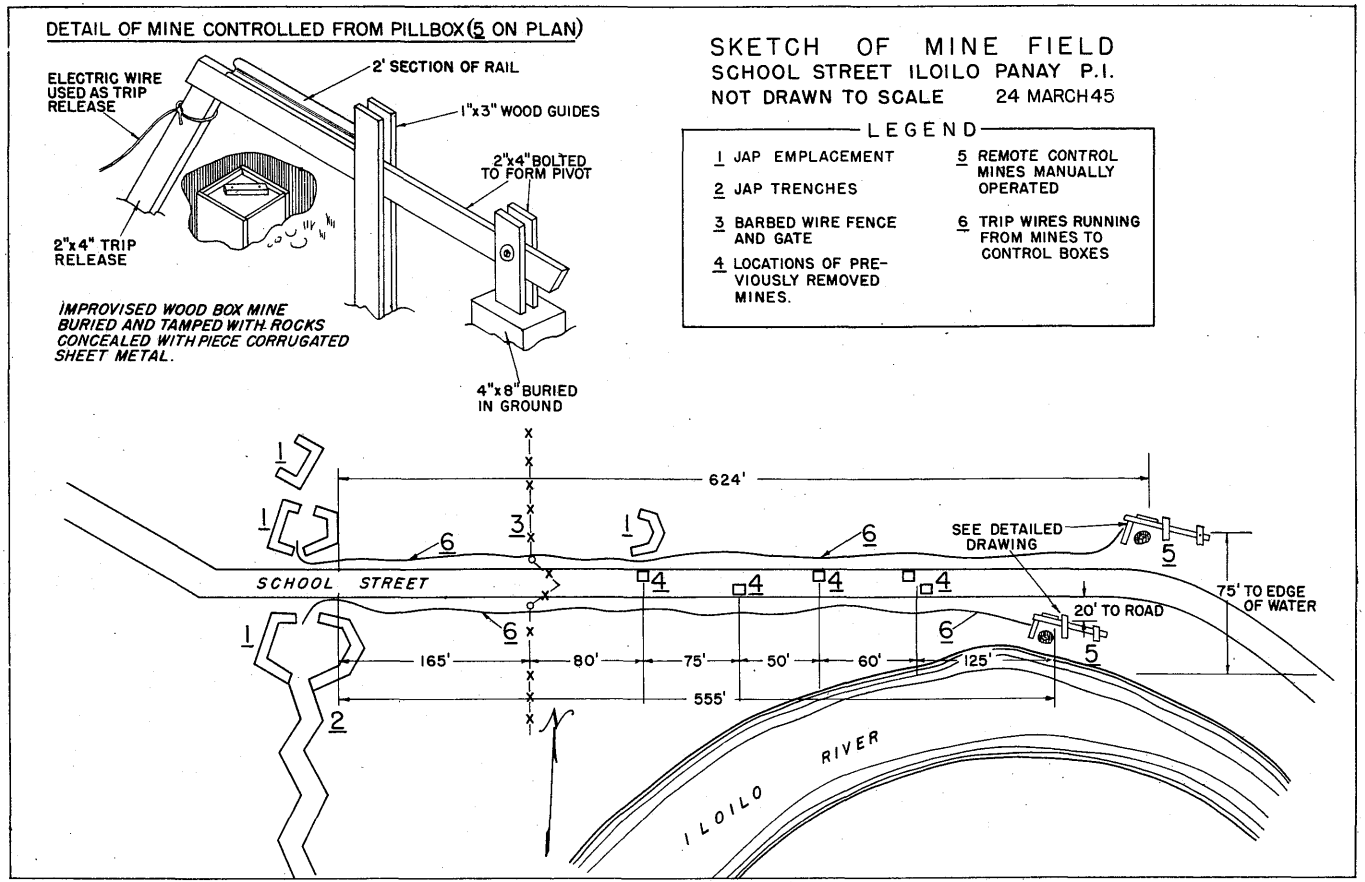
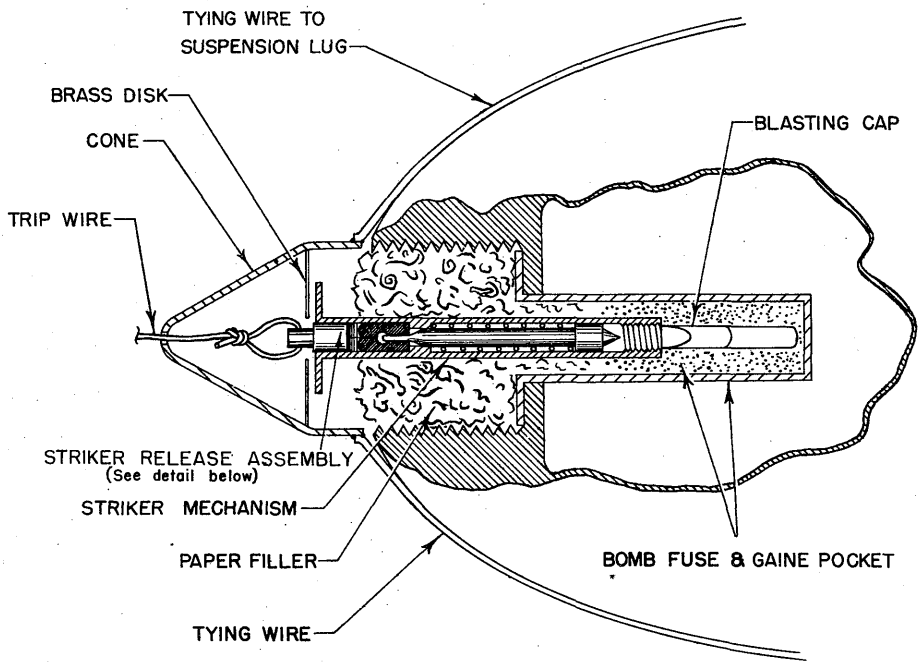


FIGURE 43-PAGE 54



TYPE 90 FLARE IGNITER MODIFIED FOR USE IN AERIAL BOMB